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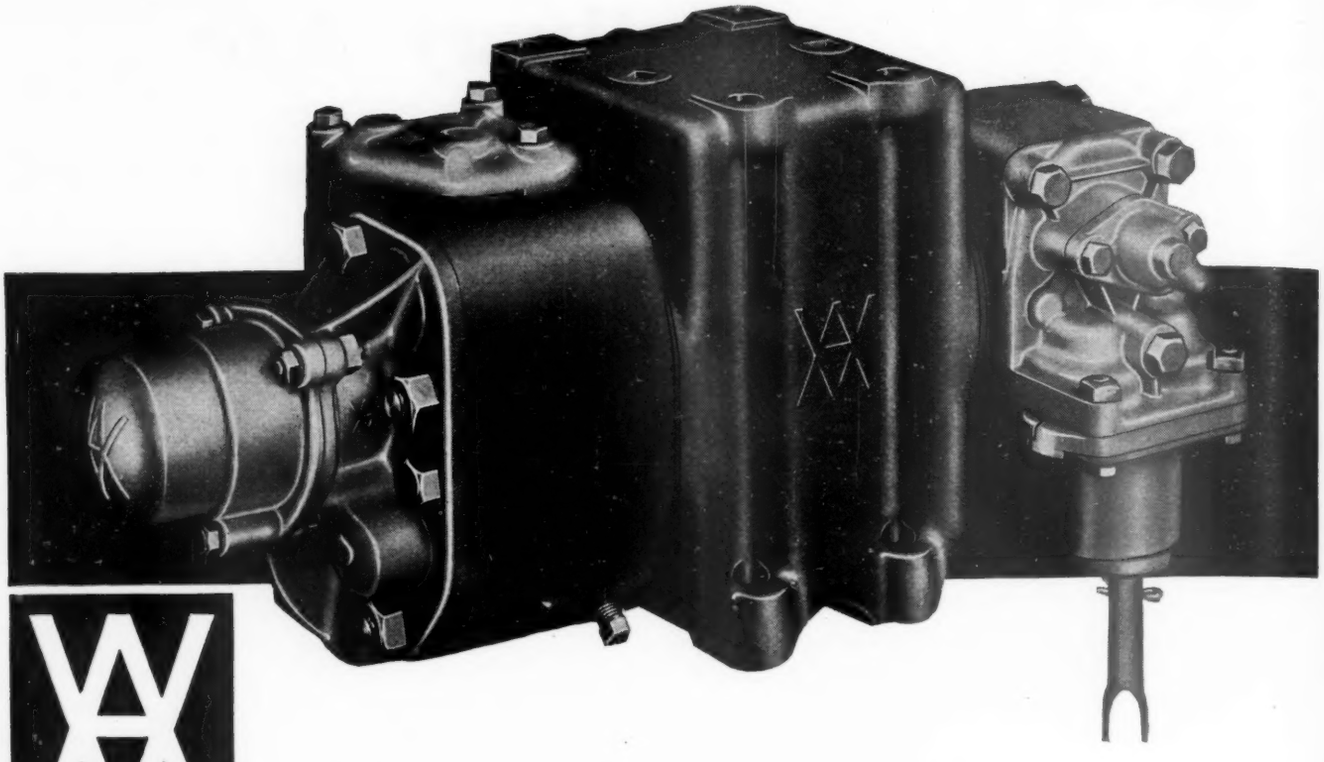

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GENERAL OFFICE AND WORKS . . . WILMERDING, PA.

The Week at a Glance

C. AND D. WINS: The tariffs of the Eastern roads providing for free collection and delivery of l.c.l. freight went into effect on November 16 after federal courts in New York and Washington refused to issue restraining orders as petitioned by protesting trucking interests. These latter have not given up the fight, and there is a possibility of further appeals to the courts.

●

U. S. OPERATION BY 1940: Government ownership of the railroads by 1940 was predicted last week by Dr. Virgil Jordan, president of the National Conference Board, at a meeting of the Academy of Political Science in New York—unless business in general wakes up to its interest in railroad prosperity; and Dr. Jordan is not sanguine that business will rouse itself until it is too late. At this meeting, an account of which is published herein, a dozen outstanding speakers discussed the railroads—and Dr. Jordan was not the only one whose expression was startling.

●

NEW DIESEL: Baldwin has built a new 660-hp. Diesel switcher which will be demonstrated on a number of railroads. Details are given in an article elsewhere in this issue—the aim of the designers having been to make parts readily accessible and to reduce inspection and repair costs.

●

FARE CUTS A SUCCESS: So Daniel Willard told the B. & O. stockholders at their annual meeting this week in Baltimore. Revenues per passenger train mile have risen 10½ per cent since the reductions were made, Mr. Willard said.

●

FLORIDA CANAL: Whether the Supreme Court follows the election returns, as Mr. Dooley contended, may be a question. But there can hardly be any doubt that the Army Engineers do. Following a previous report adverse to the deep water canal across Florida (which confirmed the judgment of the Public Works Administration and the Geological Survey), the flexible Army Engineers have now approved the project. A mere 158 million dollars of taxpayers' money is estimated to cover the cost.

●

ONSLAUGHT ON GAS "TAX": The organized petroleum industry, according to the Christian Science Monitor, is planning a propaganda deluge to push down gasoline "taxes." At the same time a drive is being made to prevent the "diversion" of these "taxes" from highway uses. Complaint is made that the gasoline "tax" is out of proportion to taxes on other industries. Of course it is *and it ought to be*—because the gas "tax" is not a tax on the petroleum industry at all, but simply a means of collecting a toll from highway users to pay a part of the cost of highways. The argument for reducing the "tax," coupled with a complaint against "diversion," is disingenuous. Stripped of dissembling verbiage, a reduction in the level of the gas "tax" is an increase in the subsidy to highway transportation, and nothing else. Let *that* question be argued on its merits before the public. The leading editorial in this issue discusses inconsistencies of big business, and the effect they have had on its prestige.

●

UPPER BERTH WASTE: At the passenger traffic officers convention in New Orleans last week, the committee on improved equipment expressed the opinion that sleeping and other "first class" cars were not being improved as rapidly as coaches and that the unoccupied upper berth remains a problem. Officers of railways operating trains of modern design reported enthusiastically on their earning power.

●

INVENTORY ECONOMY: Improved purchasing and stores methods have saved the railroads almost 500 million dollars since 1920 in carrying charges on inventory alone—so A. L. Sorenson, purchasing agent of the Erie, told the New England Railway Club in a recent address. The speaker elucidated the fundamentals of successful purchases and stores methods, including efficient material handling and the maximization of salvage revenues.

●

CARLOADINGS OFF: The seasonal decline in freight car loadings has set in—the total for the week of November 7 having fallen to 759 thousand, breaking through the 800 thousand level for the first time in seven weeks. The total was, however, about 16 per cent better than the similar week in 1935.

●

DIVIDENDS: The Pennsylvania has declared $1 dividend on its $50-par stock, the second distribution of this amount this year. Last year total disbursements were only one-fourth as much. The Chesapeake & Ohio has declared an extra dividend of $1 in cash and $2 in new preference stock. In addition a number of roads whose stock is largely held by other railways have declared dividends—among them the C. N. O. & T. P. ($23 a share extra), Pere Marquette ($20 a share on 5 per cent prior preference arrearages), Western Maryland ($7 on preferred arrearages).

●

JOINT BOARDS A FLOP?: At the meeting of the public utility commissioners in Atlantic City last week, discussion centered around motor transport regulation. It was brought out that "joint boards," through which the I.C.C. shares its motor transport powers with the state commissions, are being neglected by the latter. The state appointees to these boards have failed to show up at hearings in a number of cases, and I.C.C. examiners have had to carry on without them.

STAFF COLLEGE: The London, Midland & Scottish under the energetic leadership of Sir Josiah Stamp will introduce another innovation by establishing a staff college at Derby where employees and officers of promise will be given intensive courses of training for periods ranging from two weeks upward. The college will have its own building providing living accommodations for 50 students, and its purpose will be to make generally known the best practices which have been developed anywhere. Another purpose will be to provide for all departments the kind of training in fundamentals which, in engineering study, can be learned from textbooks. The new enterprise will be supplementary to, and not in replacement of, existing educational arrangements for railway employees and officers—which are comparatively extensive and elaborate.

●

55 PAGES OF RAILROADS: The National Geographic Magazine for November devotes not far from half its entire issue to a richly illustrated article on the recent accomplishments of the railroads. There are 51 half-tone illustrations of widely varying subjects. All the modern trains are included in the article, but it does not overlook accomplishments in the technical and other less spectacular departments either. Nothing as comprehensive and as up-to-date as this is available, and the railways will gain much in public favor if they will encourage the public to absorb the content of this article. Our advice is—Read it and see.

●

STREAMLINED GRADING: The Burlington is pushing to completion a realinement project involving heavy grading, with the job completely mechanized—the operation being described in detail elsewhere in this issue. The embankment is compacted in layers, eliminating all allowance for shrinkage, and thorough subdrainage of the roadbed is provided.

●

TRUCKS AT CROSSINGS: The Interstate Commerce Commission's compilation of collisions between motor vehicles and trains at crossings in the first six months of 1936 shows that 20 per cent of the accidents involved trucks. Last year the proportion of trucks was only 18 per cent. High train speed is not an important factor in these accidents. The largest proportion of them occurred with trains moving less than 10 miles per hour, and 7 per cent occurred when trains were standing still.

●

HEAVY CARS OUT?: At a luncheon recently an executive of one of the large car builders expressed the opinion that no more heavy passenger cars will be built. Many railroads, he said, are studying their passenger car requirements and there is not one of them but is counting on saving up to 40 per cent in weight.

BUT — a Lot of Dollars in Labor
. . . A Definite Responsibility in Earnings

Two pieces of steel, one Agathon Alloy Steel and one ordinary steel, when forged and turned into crank-pins look identical—it might be impossible to tell them apart. » » » They both cost the same for labor of forming—Agathon costs just a few cents more for material. » » » But the Agathon Alloy Steel Crank-pin has higher strength and toughness and greater fatigue resistance that gives it longer life, greater resistance to wear and correspondingly lower maintenance. » » » Use of Agathon Steel for crank-pins, rods, axles, engine bolts and other highly stressed parts safeguards locomotive performance, minimizes idle time for maintenance and insures maximum locomotive earning capacity. » » » There is an Agathon Alloy to meet every locomotive need. May we send you further details? Address Department RA. » » » » » »

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RAILWAY AGE

The Election and Big Business

With the national election now almost three weeks behind us, it is beginning to be possible to interpret its astounding results. One thing about the vote has become clear. This is that it was only partly a class vote. Leaders of organized labor claim it was an overwhelming victory for labor. The size of the majority secured by President Roosevelt shows that a large part of the middle class voted for him. This is significant in view of the fact that it was believed that business was almost unanimously opposed to him. Whatever may be doubtful, one thing seems certain. This is that the result indicated a tremendous amount of hostility toward Big Business, not only among working men and farmers, but also even among small business men. It affords food for the most serious thought by the financiers and managers of Big Business.

While this paper has consistently opposed some of the principal policies of the New Deal, it has also consistently criticised government and business policies under the Old Deal which did nothing to prevent, if they did not help to cause, the greatest depression in history. As some contribution to the discussion of why the opposition of Big Business to the New Deal was so ineffective at the polls, this paper is going to publish this week an editorial that was written for it last May but withheld from publication because of fear that its appearance in a business paper at that time might do some harm when business was being subjected to bitter attack from other sources. This editorial, which as already indicated was written six months before the election seems apropos now, and is as follows:

An Editorial Written Six Months Ago

Frank students of the political trend seem privately to agree that within recent months it has become more favorable to the New Dealers. Those opposed to the New Deal attribute this to improvement in business that has occurred since the decisions of the Supreme Court holding NRA and AAA unconstitutional. This paper believes there is another important reason. Big Business has continued throughout the depression to be very unpopular. As long as general business did not improve there was an increasing popular tendency to believe that, while "reform" was needed, it was retarding recovery. But as soon as general business did begin to improve the continuing unpopularity of Big Business began again strongly to affect the political trend. Big Business had done nothing to prevent the depression, many reasoned; in fact, its management had largely caused it. Therefore, government measures to reform it should be increased, and only the New Dealers could be relied on for them.

Public Sentiment and Big Business

The writer recently has attended two meetings of middle-western political scientists and economists in which pending problems of government and economics were discussed at length. Few executives of Big Business ever hear themselves and their real or supposed practices and policies frankly discussed. They go to many meetings where they hear speeches attacking the New Deal, defending the capitalistic system and even defending private railway management; and they leave feeling gratified by the applause they have heard and hoping the public really believes, after all, that Big Business is all right.

It would be discomforting to most of them to attend incognito a great many meetings that are being held and hear what people are saying about executives of Big Business and their real or supposed management when none of them are supposed to be present. We apprehend that most business executives believe it is the "damn politicians" and labor leaders who cause all the trouble. They need disillusioning. Most politicians do not go contrary to public sentiment—not intentionally, anyway. Big Business is being treated by the government as it is because the prevailing public sentiment is hostile to it. All of the people want recovery, but most of them still want government to do everything

consistent with recovery to curb and burden Big Business. No doubt they are wrong about what government should do; but as long as this sentiment prevails the politicians will continue to hammer Big Business.

What Does Business Want?

The situation, including that of the railways, demonstrates either that Big Business has not learned to manage itself well, or has not learned to handle its relations with the public well, or both.

Upon what principles of economics are based the policies for government and business that are being favored by Big Business? We do not know. We do not think anybody else knows. Yet the question is vitally important. Big Business says it favors the "American system." The American system of government and private enterprise has been based upon the assumption of (1) free competition in naturally non-monopolistic industries, and (2) government regulation of monopolistic industries. The Sherman anti-trust law and the Act to Regulate Interstate Commerce were both passed almost fifty years ago to enforce competition in the former kind of industries and to regulate the railways because they were the latter kind of an industry.

Does Big Business want free competition? If so, why does it oppose enforcement of the Sherman anti-trust law? If it does not want free competition, why does it oppose government regulation of means adopted by business to avoid such competition?

If it believes industries in which competition prevails should not be regulated, why does it not now advocate abolition of railway regulation? If it believes that there should be free competition in transportation, why does it not believe that there should be free competition in other industries? If it believes that there should be free competition in transportation, why do associations of bus and truck operators appeal to the Interstate Commerce Commission and the courts for orders to prevent the railways from establishing such service and rates to meet competition as they see fit?

Relations with the Public

These questions show the dilemma with which Big Business is confronted. It does not want free competition in all naturally competitive industries, but it does not want government "regimentation," either. It wants "self-regulation." That is, it wants to compete as much as it wants to and to regulate itself enough to prevent itself from competing any more than it wants to. Most Big Business is quite willing that the railways shall continue to be regulated, although their monopolistic character has disappeared, but it does not want the competitors of the railways regulated enough to establish either equality of competition or equality of regulation in transportation.

Just how does Big Business expect to continue to "get away" with monopoly practices without government regulation? Does it not know there is such a thing as public sentiment? Apparently it does, but it is only too plain that most Big Business executives know little about what is called "public relations." They are accustomed to telling one man "Go," and he goeth, and another man "Come," and he cometh, and tend to believe they can handle relations with the public in much the same way. When they employ public relations men it is always mainly or solely to have them represent their company or industry to the public; hardly ever to have them represent the public to their company or industry. Usually the public relations man stands high as long as he gets a big audience for addresses or articles telling how well his company or industry is managed and how well it treats the public. His views are usually less welcome to most executives, and to many or most executives not welcome at all, when he begins to tell them what the public thinks of their management and what should be done to improve what the public thinks about it.

Why So Much Socialistic Sentiment?

The public relations work of most kinds of Big Business approaches futility because, first, most executives of Big Business don't really believe in public relations work; second, because most of those who do believe in it consider it is merely a job of convincing the public that the management of their company or industry is approximately perfect; and, third, because few executives of Big Business will incur enough expense for public relations work to employ capable men or give them opportunity to influence both public sentiment and the policies and practices of Big Business that cause hostile public sentiment.

What is the most important and fundamental reason for so much socialistic legislation affecting Big Business in general and the railroads in particular? It is that the minds of a large majority of the American people are saturated with fallacious economic views, and that many of the more intelligent have grievances against Big Business which are more or less well-founded. The prevailing socialistic sentiment has been created largely by the depression, largely by the effective dissemination of labor union and socialistic economics both before and during the depression, and largely by the policies and practices of Big Business.

It is highly significant that one of the principal agencies collecting and disseminating information regarding public opinion recently reported a survey in which 76 per cent of those answering a questionnaire voted that hours of work should be reduced. Whose hours of work? Whether they realized it or not, they were voting for reduction of hours only in "industry," because it is only in "industry" that reduction of hours is advocated.

What the Public Thinks

The word "industry," as almost invariably used, means transportation and communication, manufacturing, mining and construction, in which less than 40 per cent of the country's workers are employed.

By whom has advocacy of reduction of hours without reduction of daily or weekly pay in "industry" been originated and principally carried on? By labor union leaders and communistic and socialistic economists, who either believe that too much of the earnings of industry go to capital and too little to labor, or that the "profit system" should be destroyed and that the best way to destroy it is to increase hourly wages and production costs in industry so much that they will wipe out profits.

The policy also receives strong support from muddled thinkers with a large audience who can see no remedy for unemployment excepting reductions of hours without reductions of pay. What passes for the reasoning of these muddled thinkers is obvious and simple: The depression continues. There continues to be unemployment. It is principally in certain industries. Therefore, the way to end the depression is to remedy unemployment in these industries; and the way to remedy unemployment in these industries is to reduce hours of work in them so that more men will have to be employed to do the same amount of work. But, they reason, the individual worker's purchasing power must not be reduced. Therefore, as working hours are reduced hourly wages in these industries must be advanced. This reasoning sounds all right until somebody asks: How does it happen that in the very industries where hours of work are shortest and where average hourly wages are highest there continues to be relatively the largest amount of unemployment? The industries of the country must sell the bulk of their products and services to the 60 per cent of the workers and producers of the country that they do not employ. What effect will increases in their costs of production, prices and rates have upon the volume of products and services that they can sell to this other 60 per cent?

What are the spokesmen of Big Business saying about these matters? Very little. Why? First, because they do not want to antagonize their employees. Second, because they are afraid to admit that their prices and rates may be or may become too high in proportion to the incomes and purchasing power of 60 per cent of the population. What will be the results of indefinite continuance of policies that curtail the buying power of a large majority of the people? They will include continued large unemployment, continued large relief rolls, continued huge government spending and continued increase of socialistic sentiment.

Big Business and the Railways

Consider the situation of the railways. They are "coming back" as general business improves, but are being handicapped by high hourly wages and taxes on the one hand, and unregulated and subsidized competition on the other hand. With both these influences restricting increase in their net operating income it is extremely difficult for them to make greatly needed improvements in their plants and service. And meantime they are also being widely criticized for general inefficiency. The belief that the railways are inefficiently managed has been created largely by propaganda disseminated by automobile and trucking interests in their efforts to avoid regulation of highway transportation and reduction of subsidies to it.

One branch of Big Business, to maintain socialistic policies in transportation for its own benefit, has been smearing another branch of Big Business, while all Big Business has been professing to be stoutly opposed to all socialistic policies. This tends to make the public believe that government ownership and management of railways might not be undesirable, although every intelligent person in Big Business knows that adoption of it would do more to promote state socialism than any other single policy advocated or proposed by anybody.

On Saving Capitalism

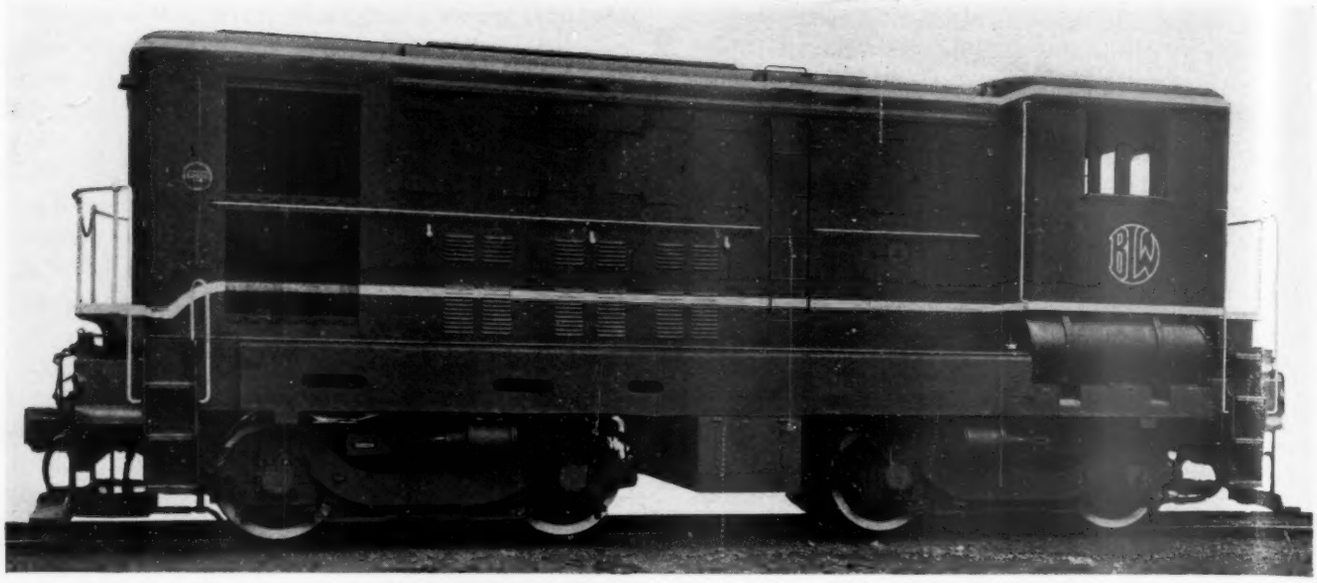
Thus Big Business stands confronted, because of its unpopularity, with numerous already adopted or proposed socialistic policies, and does almost nothing worth while to reduce socialistic policies and sentiment. The capitalistic system is not going to be preserved mainly by Big Business executives and those that they tell what to say. It is going to be preserved, if at all, by the great middle class—farmers, home-owners, small manufacturers, small storekeepers, professional men and other small property-owners who in the aggregate own the great bulk of all property. If Big Business is going to accomplish anything by its efforts to save the capitalistic system it will have to so manage itself and conduct its public relations as to get the energetic co-operation of the entire middle class. It cannot get it merely by co-operating with its own employees in policies regarding wages, prices and rates. If capitalism is to be saved, Big Business must contribute toward saving it by adopting policies which will also help increase the purchasing power of the large majority of the population not included among its own employees and by educating itself as well as the public regarding the advantages of a well-managed capitalistic system.

The problem of restoring prosperity in the United States is the problem of restoring and increasing *total* production; and this problem and that of saving capitalism cannot be solved by the management of each company or industry asking and answering, as regards every business or government policy proposed, "How will that directly affect us?"

The Week at a Glance

A New Feature

See page 21 in the Advertising Section

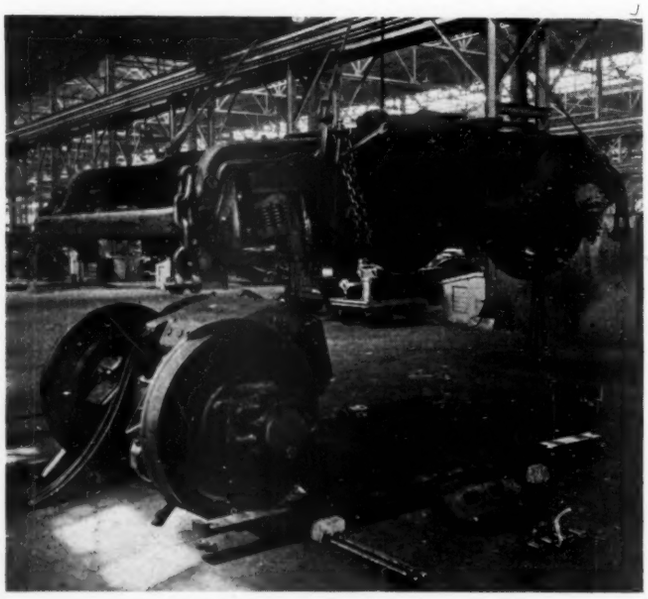


Side View of Baldwin Diesel-Electric Switcher

Baldwin Diesel-Electric Switcher

Locomotive No. 62,000, recently completed at Eddystone for demonstration service, is powered with 660 hp. De La Vergne Diesel engine and Allis-Chalmers electrical equipment

THE Baldwin Locomotive Works has recently completed at its Eddystone (Pa.) plant a Diesel-electric switching locomotive which will be used in the immediate future for demonstration on a number of railroads. This locomotive is powered with a recently developed design of De La Vergne 660-hp. Diesel engine and Allis-Chalmers electrical equipment. The basic design, however, provides for the use of electrical equipment of other manufacturers, as specified by the purchaser. The general characteristics of the locomotive are given in the table. The locomotive, operating alone, is designed to negotiate a curve of 50 ft. radius and, operating with a train, to negotiate a curve having a radius of 120 ft. The maximum speed is 45 m.p.h.



The Trucks Are Designed for Easy Maintenance—A Wheel Removal in Process

In designing this locomotive, careful consideration was given to operating conditions in switching service and to decreasing the cost of inspection and repairs. Every effort was made to produce a design in which all parts would be readily accessible. This applies not only to the general arrangement of the engine and other major assemblies, but is also carried down into the sub-assemblies comprising these major parts.

The basic feature of the design of the locomotive as a whole is the mounting of the engine, main and auxiliary generators, engine radiators, cooling fans and traction-motor blower on a common subbase, thus assuring accurate alinement. The subbase is an integral steel casting mounted on bolting lugs which are a part of the main underframe of the locomotive. A resilient composition cork-rubber pad is inserted between the subbase and the main underframe to provide protection against rail shock.

The De La Vergne Engine

The prime mover is a De La Vergne Model VO four-cycle, solid injection, cold starting Diesel engine. It has a cylinder bore of 12½ in., a piston stroke of 15½ in. and is rated at 660 b.hp. at 600 r.p.m.

A feature of this engine is the spherically shaped combustion chamber which is cast integral with the cylinder head and is connected with the cylinder combustion space by a throat. The contour of the chamber and throat is

such that air rushing in from the cylinder during the compression stroke creates a turbulence which induces a thorough mixing of the air with the atomized fuel.

The fuel-injection equipment is of the Bosch type with an individual fuel pump for each cylinder and a spray valve which enters the side of each spherical combustion chamber. Direct combustion occurs in this chamber which is offset from the center line of the cylinder and is entirely surrounded by water jacketing. This results in lower operating temperatures of valves, pistons, piston rings and cylinder liners, complete combustion and advantageous lubrication conditions.

The offset position of the combustion chamber and the elimination of a central vertical spray nozzle permit the use of a large single exhaust and a single inlet valve for each cylinder. The use of two valves, instead of four, simplifies the valve gear and allows a shorter and more compact cylinder block, as well as more space for cooling-water circulation.

The engine frame is a single rigid casting designed to obviate the necessity for through bolts or tie rods. This method of construction makes possible a very rigid and compact cylinder-block casting. Crankshaft-bearing supports are attached to the engine frame. The upper and lower main bearing shells can be taken out while the engine is in place by removal through the crankcase doors. The compact cylinder block makes it possible to reduce the length of the crankshaft.

Piston-ring grooves are cut in an aluminum-bronze collar cast in the aluminum piston. This harder alloy resists wear and lengthens the life of piston and rings as the grooves do not pound out of shape as in the softer metal of the piston body. The absence of a central spray nozzle in the cylinder head makes possible a flat, smooth piston top. Due to low operating temperatures of pistons and adjacent parts there is less expansion and tendency to bind. Therefore, piston diameters can be made closer to cylinder diameters, a feature which prevents excessive rocking of the piston as a result of piston and connecting-rod reactions.

Cylinder liners are lapped into the cylinder block with a metal-to-metal fit.

Engine speed is controlled by a Woodward variable-speed governor which is mechanically connected to the operator's station so that the Diesel engine can be adjusted to any required speed.

Electrical Equipment

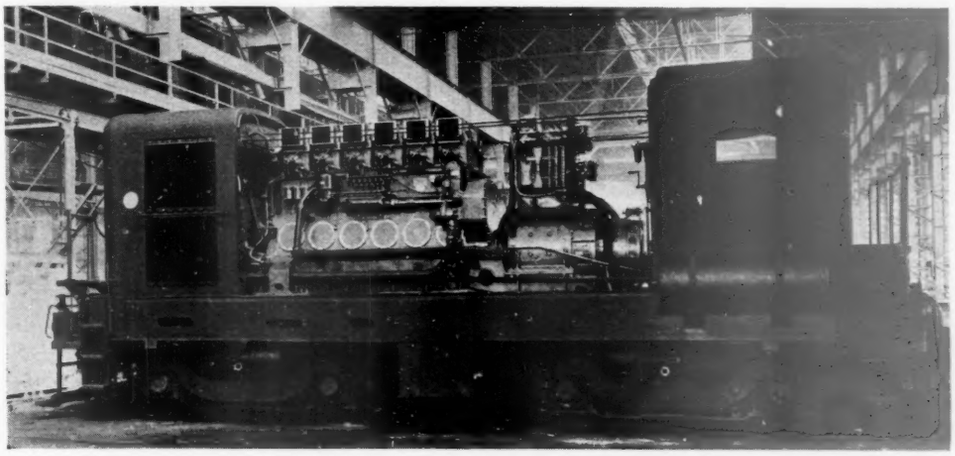
The electrical equipment for this locomotive was furnished by the Allis-Chalmers Manufacturing Company. The main generator is driven direct by the Diesel engine, both being mounted on a common base as previously mentioned. The commutator shaft is connected to the engine by means of a self-aligning coupling. The generator is both self-excited and separately excited and is of the self-ventilated, interpole type, furnishing d.c. power to the traction motors at a maximum of 600 volts. The voltage characteristics of the generators are such that, with increasing current, the voltage is reduced so that the maximum current, under any conditions, is only equal to the maximum starting current of the traction motors.

Front View of Locomotive Showing the Narrow Engine Hood

The self-excited, variable-speed auxiliary generator mounted on the main generator shaft delivers full power at from half to full engine speed to all auxiliary motors such as those of the traction-motor blower, radiator fan and air compressor. It also provides current for battery charging.

A traction-motor blower is mounted under the hood on the subbase casting. Air is delivered to an opening in the main frame which carries it to the two truck center pins. From there it is delivered to the traction motors.

The control is arranged with the four traction motors



The Locomotive Under Construction in the Shop with Hood Removed — The Arrangement of the Power Plant Is Shown

connected in parallel. This simplifies the control circuits in that no transition from series to series parallel is required. With the parallel connection of traction motors the tendency for continued slipping of the wheels of the locomotive is reduced.

The Allis-Chalmers automatic Servo field regulator is installed on this locomotive. This electro-mechanical device is a main-generator field-excitation regulator interlocked with the Diesel-engine governor and connected to a resistor in the circuit of the separately excited field of the main generator. This device regulates the main-generator excitation, not as a function of the electrical conditions, but entirely through the governor of the Diesel engine. It automatically increases the generator voltage as the motor current decreases, so that the engine load is constant at all times within the operating range of the locomotive, regardless of the speed or tractive force.

If one or more Diesel-engine cylinders become inoperative, the main-generator output is automatically reduced to correspond with the reduced engine output so that the engine is not overloaded.

An electrical equipment box is located under the main frame between the trucks. It houses the equipment connected in the main power circuits along with the necessary wiring. The box has hinged doors on all four sides, making wiring and electrical devices easily accessible.

Characteristics of Baldwin Diesel-Electric Switcher

Weight on drivers, loaded, lb.	212,000
Weight on drivers, light, lb.	200,000
Length inside coupler knuckles, ft. and in.	39-6
Height to top of cab, ft. and in.	14-3
Height of engine hood, ft. and in.	14-0
Width overall, ft. and in.	10-2
Width of engine hood, ft. and in.	5-6
Rigid wheel base, ft. and in.	8-0
Total wheel base, ft. and in.	26-0
Fuel oil capacity, gal.	500
Lubricating oil capacity, gal.	130
Water capacity, gal.	248
Sand capacity, lb.	2,200
Tractive force (30 per cent adhesion), lb.	63,600
Tractive force at continuous rating of motors, lb.	29,900
M.p.h. at continuous rating of motors	5.7
Maximum speed, m.p.h.	45.0

Other Features of Construction

The underframe of the locomotive is an integral steel casting in which are incorporated bolting lugs for the engine-generator subbase, 500-gallon fuel oil tank, storage-battery compartment, sand boxes, cab steps, traction motor air ducts, and housings for draft gear and truck center pins. Storage-battery compartments are easily accessible through trap doors for filling or replacing batteries. The interiors of the compartments are protected with acid-resisting paint.

The four-wheel swivel trucks have integral cast-steel frames, incorporating air passages through the center pin and bolster to the motor inlet. The rolled-steel wheels are 40 in. in diameter. The journals are equipped with Timken roller bearings, but friction bearings can be used on a locomotive of this type if desired. The pedestal ways of the truck frame and boxes are lined with manganese steel and provided with oil pockets to lubricate the wearing faces.

A feature of the truck design is the provision for dropping a set of wheels without removing the traction motor from the axle.

The weatherproof engine hood is of steel plate, having removable top with sliding hatches and removable hinged doors alongside the engine and generator, giving access to parts requiring attention and possible replacement. The entire roof and sides of the hood can be removed if desired. The front section houses the radiators, cooling fan and motor, traction-motor blower and the compressor compartment.

The radiators are mounted vertically in the sides of the hood to prevent blanketing and insure a free circulation of air even though the front of the locomotive may be close against a box car or other high piece of equipment. The radiators have a capacity of 248 gallons of water and sufficient additional capacity to cool the engine lubricating oil. Radiator-fan speed can be controlled by the operator who thus adjusts cooling-water temperature to suit outside weather conditions.

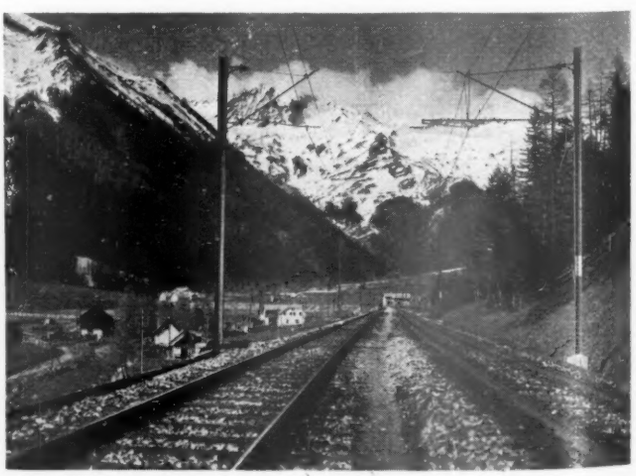
Fuel is pumped from the tank in the main underframe by a geared pump driven by a ¼-hp. motor to filters, mounted in the hood. After going through the filters, the oil passes into an auxiliary tank under the top of the hood. This tank holds 12 gallons and its purpose is to insure a supply of fuel for several hours' operation in case of an accident to the fuel pump. Fuel is fed by gravity from the auxiliary tank to the engine pump, thence to the Bosch fuel pump and sprayed into the combustion chamber.

An emergency hand pump is placed in the fuel-oil line between the main reservoir and the strainer to be used in the rare event that the motor-driven pump fails. An emergency fuel cut-off valve is installed on the locomotive and can be actuated by either one of two handles, one located in the cab and the other on the outside of the frame.

The steel cab is entirely lined and floored with cork. Doors are of pressed steel and window frames are of extruded aluminum. The entire locomotive, including engine, generator, traction motor, auxiliaries, lights and various accessories, is controlled from the cab. The control stand is on the right side. The operator not only has clear vision directly in front of him on the right-hand side, but clear vision is also provided forward along the left-hand side by a suitable mirror. The hood is only 66 in. wide which gives excellent visibility. All doors and windows are weather-stripped and an automatic hot-water heater provides comfort in winter. Windshield wipers and awnings are regular equipment.

The accessories used on this locomotive include the following: Miner A-22XB friction draft gear; Type E A.A.R. swivel-shank top operating couplers; bell with internal quick-acting bell ringer; Pneuphonic horn; Sunbeam 12-in. round-case headlights built into cab and hood, respectively, and King top-operated sanders.

* * *



Approaching the Southern Entrance of the Tauern Tunnel, Austria

The 5.3-mi. tunnel begins behind the group of houses seen in the left background, at an elevation of 4,010 ft. The mountain seen in the middle is the Ankogel, 10,700 ft.

Learned Group Discusses Railroads*

Academy of Political Science hears wide variety of pungent opinions of distinguished speakers on carriers' prospects

A DOZEN of the nation's well-known railroad and financial men and educators with pronounced ideas on various phases of the railroad situation gave expression to their views before a distinguished audience at a meeting of the Academy of Political Science at the Hotel Astor, New York, on November 12. Topics discussed included the regulation of competitors, labor relations, restrictive legislation, a criticism of railway financial policies, and industry's interest in what happens to the railroads. The day's session was closed by a dinner meeting at which addresses were presented by Thomas W. Lamont, of J. P. Morgan & Co., Commissioner Joseph B. Eastman and S. T. Bledsoe, president of the Atchison, Topeka & Santa Fe.

Business Not Alert to Its Interest

Dr. Virgil Jordan, president of the National Industrial Board, discussed "Industries' Interest in the Railroads." He said that interdependence of the various classes of producers in the community was a primary fact which must be considered in any effort to establish general prosperity. The interest of industries in the railroads he divided into three categories as follows:

1. Their interest in securing efficient transportation service at the lowest possible *real* cost.
2. The effect of railway purchases on payrolls and employment in a great many industries.
3. The effect which government policies as regards the railroads might have in rendering their services less efficient and more costly as leading the way to similar policies by government toward industry generally.

His view of the future of the railroads was not a hopeful one from any of these points of view. True, the railway situation has improved somewhat and their purchases have increased somewhat, and these latter have augmented industrial payrolls. However, in his view, there exist political tendencies (particularly with regard to labor legislation and subsidization of competitors) which will either increase transportation costs or cripple the railways financially. If the former, then industry will suffer from higher transportation charges. If the latter, then private investment will be gradually expropriated and new capital will have to be supplied by the government. If this becomes necessary, then the railroads would be partly supported by taxation and the *real* cost of transportation would be increased. In either eventuality, in his view, railroad transportation costs are going to be higher which will mean a corresponding reduction in the standard of living of the country from that which would otherwise obtain.

Prospects for New Capital Not Bright

Highways and waterways can never afford anything but accessory transportation facilities, he said. The reliance of the country must still be on the railroads. Technical improvements are available which could greatly lower the cost of transportation service and hence could greatly increase prosperity of the employees and industries which supply railway materials, and increase the standard of living in the country generally. However, this would necessitate sufficient prospect of net earnings to draw new capital to the industry and in the light of present political tendencies, Dr. Jordan is not hopeful.

He emphasized the effect of railway purchases on employment in the heavy industries. Since 1932, he said, there have been at least two million people unemployed in industry and on railroads as a result of the depressed condition of the latter. There could be no better contribution made toward the ending of unemployment than the restoration of a reasonable degree of prosperity to the railroads.

The responsibility rests with the government. Government policies are responsible for the progressive paralysis of private initiative and enterprise in the railroad industry and, therefore, the government is responsible for a situation which is lowering the general standard of living of the American people and is accentuating unemployment.

The early stages of government regulation corrected abuses, he said, but latterly government policies toward the railroads have served chiefly to advance local and special interests at the expense of the national interest. These policies have definitely hindered the railroads in reducing costs, and thereby increased the national standard of living. Meantime, government work programs are adding vastly to the mileage of

Some Noteworthy Views on the Railway Situation

Unless business generally awakens to its interest in the railroad situation, we shall have government ownership by 1940—the first step in a plan to socialize all industry.

In view of modern competitive conditions, organized employees in their own interest should refrain from restrictive rules and "make-work" schemes.

Regulation should be restored to the form it had in 1906.

In no other country in the world are railways handicapped in meeting competition as the U. S. roads are by the Fourth Section.

America's waterway policy is a "shocking spectacle."

Sinking funds are a mistake.

The railways should greatly increase their charges to depreciation and other reserves.

The outlook for new capital for the railroads is not bright.

Roads should develop a long-range program and cease "brushing aside trouble."

* These addresses will be published in extenso by the Academy (address care Columbia University, New York) in the next volume of its Proceedings which will be available to non-members at $2.50 a copy.

subsidized competitive duplication of transportation facilities.

Dr. Jordan foresees government ownership in four or five years. He believes that this will come as a result of a deliberate policy, the purpose of which is to paralyze private industry and private investment, with the railroads at the top of the list, since they are so thoroughly regulated that they are the easiest to be got at. Other industries will then be taken over in turn by the same technique. Thus the collective state will be brought about, with higher costs and poorer service and a lower standard of living for all. Dr. Jordan said that he took this pessimistic view because other industries were not sufficiently awake to their own interests in what is being done to the railroads. If they could be awakened to see their interests and could put aside immediate selfish considerations long enough to take a broader view, perhaps the movement toward collectivism could be arrested; but he doubts that such interest will be aroused soon enough to do any good.

Lloyd K. Garrison, dean of the Law School of the University of Wisconsin, and former chairman of the National Labor Relations Board, had as his topic "Labor Relations in the Railroad Industry." Dean Garrison gave a short historical resume of the development of mechanisms for the settlement of railroad disputes on the railroads and went into some detail as to the duties of the National Mediation Board and the National Railroad Board of Adjustment. Regarding the work of the latter, he emphasized the large number of cases which are being handled and the tendency of the board to run behind its docket. He pointed out that in a large number of these disputes a referee had to be called in and he recommended that in place of a referee there should be a permanent board of three full time impartial appointees of the President to settle cases now referred to a referee. He also recommended that a time limit be set on the filing of claims with the Adjustment Board.

Garrison Warns Labor Against "Make-Work" Schemes

Dean Garrison said that, in view of the railways' competitive situation, employees and managements should co-operate as never before; and that there are many things in the way of burdensome working rules and make-work schemes which the employees should abandon as bad both for themselves and for the industry. However, he said that in his view these burdensome restrictions were but symptoms of hunger on the part of employees for greater security, and of their fear of an indigent old age. If these natural concerns were dealt with directly, perhaps the make-work schemes might be abandoned. He expressed the belief that there was enough statesmanship among both the men and the managements to overcome these difficulties.

Judge R. V. Fletcher, vice-president and general counsel of the Association of American Railroads discussed "Restrictive Legislation, Rates, Wages and Taxation." He stated that the policy of democracy was equality before the law and the denial of special privilege and that the railroads seek nothing which democracy abhors. He called attention to the fact that ownership of property and the risks of enterprise are also characteristics of democracy and that in the largest and dominant democracies—the United States and Great Britain—railways are in private ownership.

Favors Regulation as It Was in 1906

Judge Fletcher maintained that railway regulation should have stopped with its accomplishments up to 1906. Up to that time, he said, regulation served to correct abuses. Since that time most changes in the Interstate Commerce Act have been toward strengthening bureaucratic control and taking away from the railways the flexibility needed to meet changing conditions. He especially emphasized, as departures from sound regulation, the authority accorded to the Interstate Commerce Commission in 1910 to suspend rates for seven months and the amendment adopted in that year which struck out the provision "similar circumstances and conditions" from the long-and-short-haul clause, thus compelling the railways to choose between not making competitive rates where competition exists or making rates at a competitive level where competition does not exist. This change, he said, had penalized the great middle section of the country, dependent entirely upon railroad service, and had greatly handicapped the railroads besides.

The consolidation plan embodied in the Transportation Act of 1920 he characterized as largely a failure, except for the provision it had made for a limited degree of amalgamation by leasing arrangements. He did not blame the Interstate Commerce Commission for the failure, stating that the scheme was intrinsically unworkable. The Valuation Act also, in his view, has accomplished nothing except the compilation of "dreary volumes of statistics now completely obsolete." Something can be said, he agreed, for control by the Commission of the issue of securities and for securing its permission for the construction or abandonment of lines but, he added, quite as much can be said against their control of these actions.

As for the Transportation Act of 1933, and the work of the Co-ordinator, while complimenting Mr. Eastman for his performance, Judge Fletcher said that the "role of an autocrat is a difficult one no matter how well he may do." He regarded the refusal of Congress to renew this office as "one of the most hopeful signs of the times." With regard to federal control of motor transport, he said that while there was a logical necessity for placing all forms of transportation under the same degree of regulation, it would be a much easier task to equalize regulation under conditions as they were in 1906 than to bring all carriers under the same complex regulation now in force on the railroads.

Labor-Management Disputes Can Be Settled by Negotiation

He expressed his belief in the ability of railroad employees and managements through collective bargaining to settle their disagreements. With the exception of the Adamson Act—which was passed at the behest, not of the unions, but of the President of the United States—advancement in railroad wages and working conditions had always been achieved through negotiation and he was hopeful that all other matters in controversy could be so settled. The problem of unemployment still remained to be solved, he said, and he expressed the hope that the railways, in view of their highly competitive and vulnerable position would not be selected for advanced experimentation.

He dealt briefly with railroad tax problems—primarily the penalty taxation on undistributed income. He told of attending hearings before Congressional committees at the last session of Congress on the same day where at one hearing the railways were severely criticized for not having provided sinking funds for the retirement of funded debt; whereas at the other hearing he presented testimony against a provision which penalized by taxation the accumulation of such funds. Nevertheless, such penalty is included in the tax law as it was passed. He also drew attention to the handicap under which the railroads are laboring by reason of the much higher taxation levied upon them than upon their competitors.

Thomas F. Woodlock, contributing editor of the Wall Street Journal and former member of the Interstate Commerce Commission, had as his topic "Competition, Within and Without." Competition and economy he maintained are incompatible, because competition assumes more than one enterprise seeking to provide a service which only one will be chosen to give. In early competition among railroads, he pointed out, there were extensive bankruptcies so that the losses of competition were borne by the few and the benefits by the many. As early as 1894 the Interstate Commerce Commission called attention to the fact that, while other countries regulated their railways, none of them enforced competition. The Commission repeated observations of this kind from time to time, but by the turn of the century the efforts of the railroads to protect themselves from competition led to fear of monopoly on the part of the public, and since that time the enforcement of competition has been a dominant characteristic of the public policy toward the railroads. He emphasized the illogical character of the long-and-short-haul clause and stated that in no other country in the world could any match be found for this limitation on the railways. In all other countries the amendment of this provision, as called for in Congressman Pettengill's bill in the last session of Congress, is generally recognized.

Railroads Treated as "Public Enemies"

Mr. Woodlock complimented the work of Co-ordinator Eastman, particularly in the compilation under his supervision of the vast amount of information which could have been secured in no other manner and he expressed the opinion that Mr. Eastman was "in every sense of the word a master of the subject." He decried the inter-railroad competition which arose in the 'Twenties, when many railroads became "car crazy." With respect to the present complaints of the highway carriers against the provision of collection and delivery by the railways, he observed that highway operators have the curious idea that they should be permitted to compete with the railroads but that the railroads should not be permitted to compete with them. Whatever may be the extent of subsidies to highway carriers, he said, there can be no doubt as to them in the "shocking spectacle" of our waterway policy which provides a free channel, has put up the capital for a federal barge line, has passed the Denison Act which forces the railways to share their traffic with the waterway carriers and which has established no regulation whatever over these latter. The railroads are treated as "public enemies."

He advocated a correction of these conditions so that the various agencies of transportation might be placed on a basis of equality, and that the railroads should be permitted to readjust their rates as fast as possible to meet rapidly changing conditions.

Henry S. Sturgis, vice-president of the First National Bank of New York spoke on "Management and Financial Policies." He contended that the railroads are an expanding industry and that sinking funds to retire their bonds are not needed. The problems met with in dealing with bonded indebtedness he declared arise from inadequate earnings, and managerial and governmental policies are responsible for these. Since railway capital investment is not decreasing, there is no reason why capitalization should decrease, and this is what sinking funds imply. There is a need for capitalization to consist in a greater proportion of equities, but sinking funds penalize the equities. He blamed railway managements for acquiescing in the Commission's requirements for sinking funds without a more vigorous protest.

He was quite critical of the railroad bankruptcy law as it now stands, believing that the requirement that the debtor should prepare a plan for reorganization is wrong, and that the consequent over-regard for the equity interest "has destroyed what little remains of railroad credit." Furthermore, under present legislation, he believes that reorganization promises to take more time and to prove more costly than ever before.

Railroads Criticized for Inadequate Reserves

He criticized the railroads for inadequate reserve for depreciation, obsolescence and contingencies. If adequate reserves of this character were set up, he contended, the railways could continue normal replacements and scrap old equipment which is costly to operate. Such reserves would enable the roads constantly to lower operating costs as improved equipment becomes available. Furthermore, he asserted, the failure to establish such reserves brings about an over-statement of earnings and invites agitation for wage increases and rate reductions; and involves the payment of income taxes on income not actually earned.

He complimented the quality of character of railroad men and attributed "inherent vitality" to the personnel but, he added, the life experiences of these men has made them individualists to the extent that competition between railroads has had more bad effects on their revenues than the competition which they have suffered from other agencies of transportation. The great need of the railroads today, he declared, is for greater co-operation with each other not only to meet common problems which arise from day to day, but in the development of a comprehensive and well-thought-out program which will sustain them over a period of years. The need for this is manifest, and railroad men admit it; but what is everybody's business is nobody's business, and nothing is done toward the development of such a comprehensive program. He believed that men of wide business and financial experience, if called upon, could help the railways to develop such a long range program adequate to their needs. He especially warned against "brushing aside trouble" as a railroad characteristic which merely temporizes when there are fundamental problems of a very serious nature to be solved.

No More Insurance Funds for the Railroads?

Sterling Pierson, general counsel of the Equitable Life Assurance Society spoke upon the investors' interest in the Railroads. Mr. Pierson called attention to the widespread financial interest in the railroads by reason of fiduciary holdings of their securities. The ultimate investor, however, is always an individual, but it is difficult to appraise the dominant income interest of the individuals who, in final analysis own the railroads. There was a keener realization of the public interest in this matter in 1932 than now he said; and cited the speech of President Roosevelt at Salt Lake City in the 1932 campaign wherein he proposed a national transportation policy designed to restore prosperity to the railroads and health to their securities, as well as to promote the public interest in greater transportation efficiency.

Under present conditions, he doubted whether the fiduciary institutions would care to make any further long term commitments in railroad securities; the outlook was not sufficiently promising. The day is gone when an insurance company could buy a 75-year railroad bond, put it away and forget about it until maturity. Economic shifts are occurring so rapidly that an important railroad may, within a very few years, decline to a position of minor importance; and this condition

makes it necessary for the fiduciary holders of bonds to keep constantly on the alert as to what is happening on the properties in which they have invested their clients' money. He said that the insurance companies considered the correction of the present situation to be primarily a managerial task. He suggested serial maturity dates for bonds in order to avoid the danger of large maturities falling at inopportune times.

Bankruptcy Act Has Few Friends

He agreed with Mr. Sturgis that the Bankruptcy Act should be amended and said that in proposed reorganizations insufficient weight was given to the just claims of bondholders. They accepted a low return in order to secure a steady income and greater safety. The matter of steady income, he said, was of great importance to the insurance companies—hence the injustice of asking them to assent to a non-cumulative feature in income bonds issued in reorganization. There is a great need, he said, for "energy and enthusiasm on the part of managements." Without this quality, he said, investors are put off when revenues are low with the promise that things will soon be better; but just as soon as things are better this type of management can think of all kinds of things on which it is necessary to spend money. The investor, he said, is keenly aware of the need of greater co-operation among the railroads in solving their problems, and on whether this is brought about will depend to a large extent a willingness on their part to advance any more money to meet capital requirements.

F. E. Williamson, president of the New York Central has as his subject "The Changing Position of the Railroads." He distinguished between short time changes and long time. Experience in railroad work had given the railroads a "surprising toughness of fibre" and a "resiliency" in dealing with changing conditions. Among the latter he mentioned the development of the Diesel locomotive and said that one of the most important problems of management is to know whether to put a piece of equipment on the scrap heap when it still has service life left in it. He said that the New York Central in recent years has retired 1600 locomotives, 65,000 freight cars and 672 passenger cars. He stressed the need for a national transportation policy which would continue each agency in its proper place. So far each competitor has been kept in an air-tight compartment and development has gone on without regard to other agencies.

Federal Nurse Maids for Railway Competitors

Excepting the railways, every form of transportation has some governmental bureau actively fostering its development and none of these government bureaus have any regard for the other agencies of transportation. He mentioned the inland waterways and how the army engineers would recommend a project as economically justified if prospective traffic attained a certain figure, regardless of the fact that none of that traffic might be new, but rather drawn entirely from other agencies of transportation which were giving adequate service. He also called attention to the roadbuilding program as developed by the Bureau of Public Roads which concerned itself rather with paralleling the railway mileage of the country with high speed heavy traffic roads than with developing transportation into local areas without transportation facilities; similarly with the development of air transportation under the aegis of the Department of Commerce.

These policies, he said, had resulted in a great surplus of transportation which surplus was the greatest where transportation was the heaviest—that is to say where ever traffic is good each competitor has gone in for as much of it as he can get. He called attention to the requirement for certificates of convenience and necessity for railway construction, and raised a question as to why a similar requirement should not be necessary for highway and waterway projects. Public policy, he said, should comprehend all agencies, should treat them all equally and should establish the same income basis for all, requiring each to be self-supporting.

He complimented the railway labor organizations "as the most effective, active and articulate" of any labor organizations. He said that they had served their members faithfully and well and were now powerful both economically and politically. He looked with some misgiving, however, on the exceptional consideration given railroad employees in pension legislation and in legislation designed, not to promote labor, but merely to "make work." He stressed the economic superiority of railroad transportation arising from its ability to take small traffic units (carloads) and handle them in mass transportation (trains)—a superiority which assured the future of the railroads provided they were given a reasonably fair opportunity to meet changing economic conditions.

Need for Unified Transport Policy

Mr. Williamson was preceded on the program by Professor W. J. Cunningham of Harvard University. He spoke on transportation co-ordination. He expressed the belief that the Interstate Commerce Commission should be given equal jurisdiction over all forms of transportation so that each agency might be furthered in the particular sphere of its superiority, always with the economic welfare of the nation as a whole as the first consideration.

Mr. Lamont spoke in opposition to government ownership of the railroads. If the government should take over the railroads, in his opinion, it would be difficult to avoid taking over other agencies of transportation as well. He also raised the question as to whether if the railroads were operated by the government, it would continue to subsidize competitors, thereby destroying its own investment in the railroads.

Mr. Eastman said that the "staggering difficulties" of taking over the railroads on terms fair to the owners and the government, together with the fact that the railroads are only one important means of transport, are "complicating factors" which justify doubt as to the wisdom of public ownership and operation under present conditions. Mr. Bledsoe discussed the possibilities of co-ordination of terminal and other facilities and expressed doubt as to the efficacy of Section 77 of the Bankruptcy Act in bringing about successful reorganizations.

Oliver Says Unions Pioneered for Competitor Regulation

Discussing the addresses of Mr. Williamson and Dean Garrison, E. L. Oliver, director research department of the Brotherhood of Railway Clerks, defended railway pension plans on a higher basis than that for other industrial employees on the grounds that the field for railroad pensions had already been explored and sufficient data were available on which to proceed, whereas with the remainder of industry the Social Security Act was proceeding on an experimental basis in relatively unknown territory. He defended the proposal for a six-hour day in railroad service by citing the fact that the eight-hour day has been in effect on the railroads since the time of the war, with no reductions in hours since

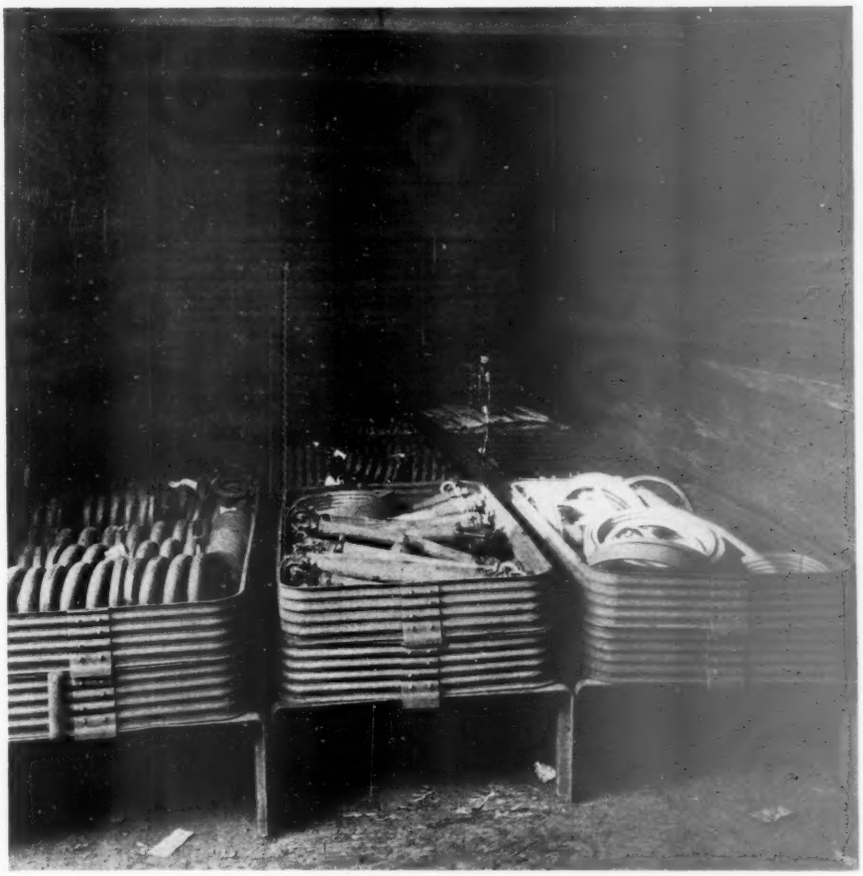
(*Continued on page 762*)

Essentials of the Service of Supply*

Problems and accomplishments of purchasing and stores departments reviewed—Conservation of material urged

By A. L. Sorensen

Manager of Stores, Erie, Hornell, N. Y.



Distributing Supplies in Skids on the Erie

THE object of business is to sell at a profit. The railroads are not manufacturing organizations but operating companies producing transportation. They are broadly divided into men, material and money, each having its relative importance. Methods of control to make greater use of one must exert more or less beneficial use upon others. The instability of one cannot help but affect the stability of the others.

In 1935, out of each dollar of revenue accruing to the railroads, approximately 45 cents was paid for labor and 22 cents for materials, including locomotive fuel. The necessity for an adequate system of material control has become quite as generally recognized as the necessity for an adequate system of cash control. Without effective control, an unnecessary amount of working cash may be converted into materials before they are needed. On the other hand, if materials are not immediately available, expensive delays to operation may result.

Inventories and Carrying Charges

The material and supply balance of Class I railroads as of December 31, 1920, was somewhat over $755,000,000, as compared with a present balance somewhat under $300,000,000, including scrap. The reduction, although somewhat affected by price trends, has provided a substantial amount of working cash to the railroads for other purposes. Assuming that 15 per cent per annum is a fair carrying cost, representing interest at 6 per cent, depreciation, obsolescence, taxes and insurance, the combined saving in carrying charges on the reduced investment since 1920 has amounted to over $450,000,000.

The investment in material and supplies comprises some 70,000 or more items necessary to the operation of the railroads of the country. Constant studies are being made of simplification and standardization of materials tending toward a reduction in the present number of items which it is necessary to carry in stock. The railroads have realized for years that too many varieties result in excessive investment, greater carrying costs, slow turnovers, rapid obsolescence, decreased profits and economic waste.

There is still much to be done on the subject of standards, but specifications are now generally clear and descriptive and are understood by manufacturers. It is futile to develop specifications without provision to insure that the materials received are in accordance with the specifications. Specifications should, to the greatest extent possible, provide for the purchase of competitive materials, it being understood that the inspection branch, either as a part of or auxiliary to the supply department, is essential to scientific purchasing. The supply department generally does not and should not establish standards but should have a voice in their establishment and also a very definite voice as to disposition of materials on hand or on order, purchased prior to specification changes.

In 1935, the average revenue for hauling a ton of freight one mile was less than one cent. Therefore, the

* From an address presented before the New England Railway Club at Boston, Mass.

necessity for the constant checking of expenditures is apparent. The scrapping of one track shovel that might be reclaimed involves the hauling of one ton of freight somewhat over 250 miles. About nine per cent of all ton-miles of lading carried by the railroads represents materials, fuel coal, ashes, cinders, rails, ties and other company purchases or used materials to be disposed of. This brings home to supply department officers the importance of capacity loading and the prompt handling of cars, as well as the shipping of carload quantities of materials directly to the job. A moving car is an asset, an idle car a liability.

It is only through constant effort that material conservation bears fruit, and it is somewhat more difficult to educate all employees to become material-dollar minded than labor-dollar minded. Material is merely the result of money exchange and should be given the same protection as though it were left in the form of money. The fact that materials purchased are stored implies value. Therefore, it is a form of wealth. Storing is necessary where deliveries and use are irregular, but storage adds to the cost of the material, the interest on investment, maintenance, depreciation, taxes, insurance and also the cost of clerical work in maintaining records, interest charges on fixed or movable equipment, light, heat, etc.

About 1,000 stores are required throughout the country in connection with railway supply work. At larger storehouses the sectional plan of organization is effective in promoting economy by placing with each man in charge of a section definite responsibility for shortages, balances and surplus as well as proper housekeeping conditions. This form of organization creates competition and gives the stockmen an opportunity to familiarize themselves thoroughly with prices, turnover, complaints, etc.

Ordering Materials

The stores branch of the supply department is responsible for having material on hand at the proper time and in the quantities required without creating unnecessary investment, but unlike a manufacturing plant, practically all of the materials purchased are used for repairs and replacements, and during no equal period is the consumption identical. To date, the best basis for ordering is as follows:

(1) Taking monthly inventories for ordering purposes.

(2) Figuring usage for the past 30 and 90 days, the amount on hand, the amount due and then, generally, to order on the following basis:

For running repairs to cars and locomotives, order for immediate past consumption with due regard to the season of the year and the business moving on the railroads. For minor items, order for immediate past consumption; and for heavy items of repairs to cars and locomotives, order for delivery to meet the monthly output on the basis of advance inspection reports made of cars and locomotives to be given general repairs. For protective items of materials, establish a centralized stock to be held at general stores, as indicated in the stock books. Railroad ties are generally treated and have to be ordered with due regard to the treating period. Rails, spikes, bolts, tie plates, angle bars, etc., for rail relaying programs are generally ordered shipped direct by manufacturers to such rail jobs in quantities to meet the monthly consumption. Staple materials for ordinary repairs in the maintenance of way department are usually shipped monthly from general stores and ordered on the basis of immediate past consumption, regard being given to the work to be done and seasonal requirements.

It is the duty of the stores department to prepare requisitions and, preferably, also purchase orders for all material to be purchased, to provide proper storage and to arrange for the economical handling and proper accounting of materials. The material classification, which is the stock book, covers all references for ordering and control of investment. Stock books are generally loose-leaf and of the key-sheet type, issued by a duplicating process by the officer in charge of stores operations, so that the sheets in each storekeeper's office are exactly like those in the master book maintained at the general office of the supply department. These books indicate whether an item is to be purchased or to be furnished from some other storehouse, and, if so, what storehouse, and also show by months the amount on hand, due, used, ordered and the requisitions or order references.

All requisitions and purchase orders are checked in complete detail through the general office of the stores department before being advanced to the purchasing agent; and if materials are available on the railroad, the order is filled from stock on hand at some other point. A copy of each purchase order placed by the purchasing agent is forwarded to the consignee who thereafter deals direct with the manufacturer for delivery. As soon as material is unloaded and tallied, the tally is forwarded to the general stores office and checked against the invoice received from the manufacturer. If found correct and the inspection notice is attached, a voucher is prepared.

A study of quantity differentials has enabled supply departments to save considerable money in their purchase bills by purchasing in larger quantities for shipment to a central point for redistribution. It is the definite responsibility of the supply department to procure materials and dispose of scrap on the most economical basis, giving consideration to the life of the product purchased and to verify the units of materials invoiced against the railroad. Joint checks should be made with using departments to eliminate unnecessary waste in borings and turnings in finishing rough castings, rough forgings, etc., finished in railroad shops.

Material-Handling Equipment Needed

Much progress has been made during the past few years by the supply department of the railroads in the handling of inbound and outbound materials through the adoption and general use of highway trucks, tractors, trailers, skids, skid boxes, containers, both hand and power lift-trucks, etc. The investment in material-handling facilities and stores facilities runs into many millions of dollars. It is essential that a properly organized stores department make constant studies, in the light of changing conditions, to develop further handling economies found possible from time to time.

The use of skids does not seriously decrease the lading per car, and it is economical to have such materials as brake shoes, brake beams, air pumps, journal bearings, engine brasses, certain bolts, rivets and various other materials loaded on skids by the manufacturers for delivery to various railroad store points. Likewise, boiler lagging can be stored on flat-top skids and delivered direct to the locomotives. All journal bearings can be shipped in skids at a considerable labor saving. Handling lumber by locomotive cranes assists in reducing costs. Automotive facilities for delivering materials to and from and within shops have greatly decreased costs and facilitated handling. In the use of automotive equipment, consideration should be given to proper roadways.

Supply Trains

For some years it was a general practice to deliver materials to maintenance of way gangs and the trans-

portation department by supply trains which involved considerable operating expense, particularly to the transportation department. By co-ordinating deliveries and shipping materials wherever possible in carload quantities over one or more divisions and handling the smaller materials by supply cars through general storehouses, this expense has been substantially reduced. The shipping of materials for rail renewal programs in carload quantities direct to the point of use eliminates intermediate handlings.

The materials when disbursed or transferred are handled either by individual slips covering the disbursement or by transfers, all of which are generally priced either in the accounting or the supply department and one source, except where so-called direct pricing is in effect. Where the latter is in effect, the materials are priced as and when disbursed from prices on the bins, such prices being furnished from a central bureau as often as may be found necessary. To receive the greatest economic benefits, the pricing of material should be a function of the supply department.

Generally at the end of the month the supply department issues a detailed material stock report on which, for each of the general classes of material, there is indicated the value of stock on hand at the beginning of the month, the receipts, the disbursements, the balance and the months' supply on hand at the end of the month. This is merely a conversion into money of the materials on hand and affords information for effective control and should be reviewed with local using department officers each month. A similar report, limited to 12 classes, is issued semi-annually by the secretary of Division VI, A.A.R., from data furnished by the various carriers.

Efficiency Measures

The supply departments of the various railroads unfortunately have not been able to devise a uniform system for measuring their results which, from an economical point of view appears to consist of the cost of operation of the department, monies invested in inventories and the final cost of materials acquired. The first cost is not always the final cost. Unfortunately, there are so many variations in accounting that comparisons are not entirely practicable at this time. Progress, however, has and is being made in this direction. Certain statistics now being prepared at least tend toward a general index of this situation between carriers.

All materials purchased are constantly wearing out and being replaced. The worn-out parts constitute scrap and have considerable sales value. When it is realized that the disposition of scrap in a normal year will produce upwards of $50,000,000, it can be realized what a business in itself this feature of railroading constitutes. In addition, there are the large items of repaired and reclaimed materials, both of which aggregate tremendous sums. All materials found in the scrap at the scrap and reclamation plants should be carefully checked for materials on which written guarantees apply, to develop if the guarantee period has expired; if not, a purchase order should be made for free replacement.

Scrap Handling

The essential economic factors in the scrap and reclamation plant operations are to be sure that nothing is scrapped except what is scrap and that such scrap is prepared and sorted to the highest grade to meet the market in which it is to be disposed. Scrap is not merely an item to be disposed of hurriedly at any price, but demands study to obtain the highest net return possible. In arriving at the net return, consideration must be given to the cost of preparation. Materials reclaimed and repaired must be studied to develop that they are not costing more than new material, premised on the life left in the material being reclaimed or repaired, or that they can be more profitably repaired or reclaimed by outside firms.

The supply departments are also generally responsible for the retirement of equipment which produces considerable scrap and reclaimable and repairable materials. The cost of retirements should be maintained by tons for locomotives and by classes of equipment for freight and passenger cars, and the costs divided in the usual manner between direct labor, material and overhead. The scrap piles often tell many dismal stories and it is most desirable to make constant studies of materials that find their way to the scrap pile to develop corrective action. It is a good plan to save for a given period such items of materials as appear to have too short a life and institute an investigation by a group of competent officers.

Local storekeepers should maintain complete detailed records of monthly balances, turnover and operating costs based on material handled. Each storekeeper and supervisor should be required to analyze the results and develop improvements. The system figures should be maintained at the general office.

Standard Rules of Practice

The issuance of standard rules of practice, maintained in loose-leaf form and properly indexed under each subject, effects uniformity in the handling of all features of stores operation, including accounting, eliminates the necessity for constantly issuing individual letters, and may be maintained up-to-date by revisions when an improved method is developed. The standard practices should be reviewed by all employees concerned, and where other departments are involved, copies of the rules should be furnished them.

The Association of American Railroads maintains a supply department division which has for many years been active and thorough in its recommendations. It is constantly looking for new ideas, new thoughts and improvements in existing methods and practices. Through the association and regional purchasing and stores group committees, the supply departments are being materially aided in providing a more valued service to the railroads. Many important items are now under consideration. One of particular interest to manufacturers is the additional number of items which are purchased in standard packages, particularly items of materials used exclusively by railroads. The manufacturers and the railroads can, by co-operative action, work out a plan whereby many more materials may be furnished in standard packages, with savings to both parties.

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* How a Grade Crossing may become a death trap even though truck drivers endeavor to cross cautiously was pointed out by Commissioner Frank McManamy of the I.C.C. in his recent address at the National Safety Congress. He said: "Train speeds of 100 miles an hour, which is 146.6 feet per second, are now common on a number of railroads. Heavy motor vehicles are by law in many States required to stop before crossing a railroad track. At many crossings trucks with trailers, which perhaps may be carrying flammables or other dangerous commodities, would be struck, before they could get across a multiple-track railroad, by a high-speed train which was not within the range of the driver's vision when he started across the tracks; and the train could not be stopped before reaching the crossing by an emergency application of the brakes made as soon as the crossing came within range of the engineman's vision."

Left—General View of the Grading Operations on a High Fill
Below—One of the Le Tourneau "Carryalls"

Below—Dump Trucks Were Used Extensively on This Project

Not a Mule in a Million Yards

All grading involved in construction of 4.68 miles of heavy line revision on the C. B. & Q. was done with completely mechanized equipment

COMPLETE mechanization of 1,124,000 cu. yd. of grading, which included the moving of as much as 11,000 cu. yd. of material in two 10-hr. shifts with a total force of less than 100 men, is one of the outstanding features of a realinement project which the Chicago, Burlington & Quincy is now pushing to completion in Iowa. Other noteworthy features embraced in this project, which comprises an outstanding example of modern railway construction, include the compacting of the embankments in layers of 6 in. to 12 in. and the elimination of all allowance for shrinkage, provision of facilities for thorough subdrainage of the roadbed, especially in a long cut from which most of the embankment material was secured, hauls of three miles or more, and a thorough and detailed preliminary exploration of the subsoil in the larger cuts for the purpose of developing information of aid to the contractors in formulating their bids.

This project embraces the construction of 4.68 miles of eastbound second track a short distance west of Chariton, Iowa, to close the last gap in otherwise continuous double track between Red Oak, Iowa, and Chicago, 443 miles, in this company's Chicago-Omaha main line. An important consideration in undertaking this project was the need for obtaining more favorable grades against eastbound traffic as the section of single track contained a grade of 1.30 per cent ascending eastward (known as Whitebreast hill), the only one in excess of 0.66 per cent between Omaha and Chicago.

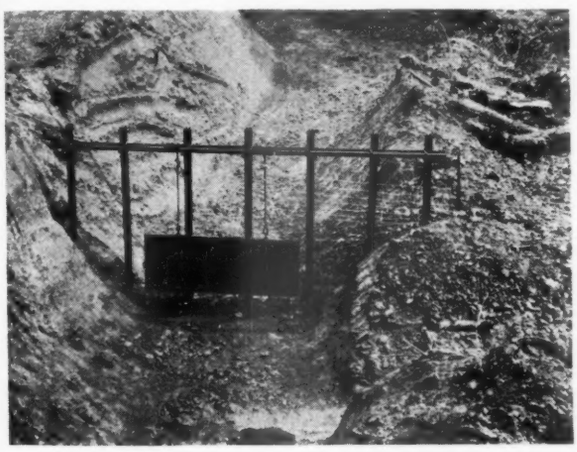
To effect the desired reduction in grade and to secure a more favorable alinement, the new eastbound track was located a short distance south of the present line, the maximum distance between the two lines being about 1,400 ft. The new line has three 30-min. curves comprising a total of 45 deg. of central angle, as compared with five curves varying from 1 deg. to 3 deg. and comprising 148 deg. of curvature in the old line. For practically its entire length the new line is being built to a grade of 0.66 per cent against eastbound traffic.

The reduction in grade on the new line was accomplished at the expense of heavy grading, which amounted to a total of 1,124,000 cu. yd. One cut at the east end of the project alone involved 462,000 cu. yd. of excavation while an embankment at the west end, where the line crosses Whitebreast creek, required 500,000 cu. yd. of fill. The grading included 180,000 cu. yd. of borrow which was obtained for the big fill at the west end from a borrow pit nearby. A total of 39,000 cu. yd. of material obtained from the cut at the east end was diverted for use in constructing the approaches

to a highway overcrossing of concrete-steel construction which was built over the new line near the east end of this cut. There was no waste on the entire project, the material being hauled as much as 3½ miles from the cut at the east end to the embankment at the other extremity. Some of the cuts have a maximum depth of 50 ft., or more while the embankments range up to 60 ft. or more in height.

As the embankment quantities were in excess of the excavation it was feasible to build the cuts to liberal dimensions. Two standard roadbed sections in cuts, both embodying 1½:1 side slopes, were employed. For the shallower cuts the bottom width is 40 ft., including side ditches 4 ft. wide at the bottom, while for the deeper cuts the side ditches are increased in width to 9 ft., giving a total bottom width for such cuts of 50 ft. Surface ditches with a minimum bottom width of 3 ft. were constructed at the tops of the slopes on the uphill side of all cuts, the excavated material being used to form levees between the ditches and the tops of the slopes. Embankments are 24 ft. wide at the top and when higher than 20 ft., are built with a 10-ft. berm on each side at a level 20 ft. from the top. Where borrow pits are adjacent to the embankment it is required that a 20-ft. berm be left between the toe of the embankment and the edge of the borrow pit.

As an aid to contractors in preparing their bids on the grading, the railroad made a thorough exploration



One of the Debris Catchers That Were Installed Upstream from Two of the Large Culverts

by soundings of the material in the larger cuts and tabulated the information on the profiles that were made available to bidders. Practically all of the grading consisted of various types of clay and bids were made on the basis of a flat price per yard, with no provision for the classification of material or for overhaul.

Grading Equipment

The grading equipment utilized on this job by the contractor was completely motorized and embraced a variety of such equipment. For excavating it included a 2-cu. yd. dragline and two elevating graders, while the hauling was done by twelve 10-yd. Euclid outfits, four 4-yd. and six 5-yd. Mack trucks, ten crawler-tread dump wagons of 7 yd. to 10 yd. capacity, and one 7-yd. Continental dump truck. Two 12-yd. Le Tourneau "carryalls" were also employed. A noteworthy feature of the Euclid wagons is that they are mounted on 18-in. pneumatic tires and operate when loaded at speeds up to 28 m.p.h. Other equipment included two road grading machines and a number of bulldozers and rollers.

The method of building the embankments was to apply the material in layers ranging from 6 in. to 12 in. in depth and to compact each layer thoroughly before the next one was applied. Because of this practice no allowance was made for shrinkage. In placing the embankments the new material was leveled by the bulldozers or road graders sufficiently to permit the loaded trucks to operate over it, dependence for securing the desired compacting of the material being placed on the action of the wheels or treads of the equipment, although rollers were also utilized for this purpose to some extent.

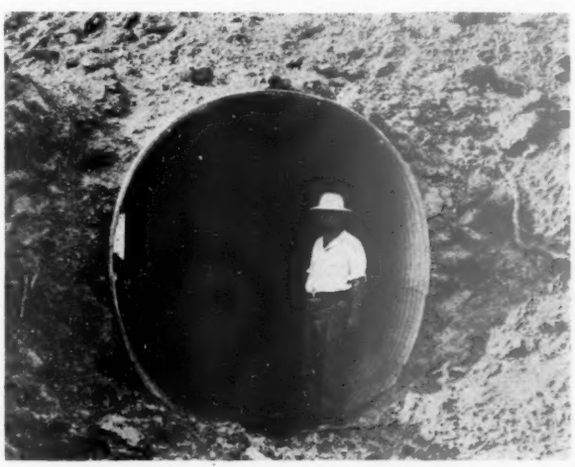
The two Le Tourneau "carryalls" were used to move the 180,000 cu. yd. of borrow into the big embankment at the west end of the new line, the remainder of the material for this fill being hauled largely from the cut at the east end. To avoid dusty conditions during the grading work a tank truck was used to sprinkle the roadway in both cuts and on embankments at frequent intervals. To insure a compact embankment all vegetable matter was removed from the surface of the borrow pit, and also from the surface of the ground within the area of the base of the fills, and this material was wasted. After scalping, the ground under the fills was thoroughly rolled to compact it as much as possible before the fill was placed.

The grading work on this project was commenced on April 23 and was completed on October 24. Operating two 10-hr. shifts daily the contractor moved 298,000 cu. yd. of material in June, 293,950 cu. yd. in July and 201,130 cu. yd. in August. At night the work was illuminated by floodlights on the grading loaders and on the embankments at the points where the material is being dumped.

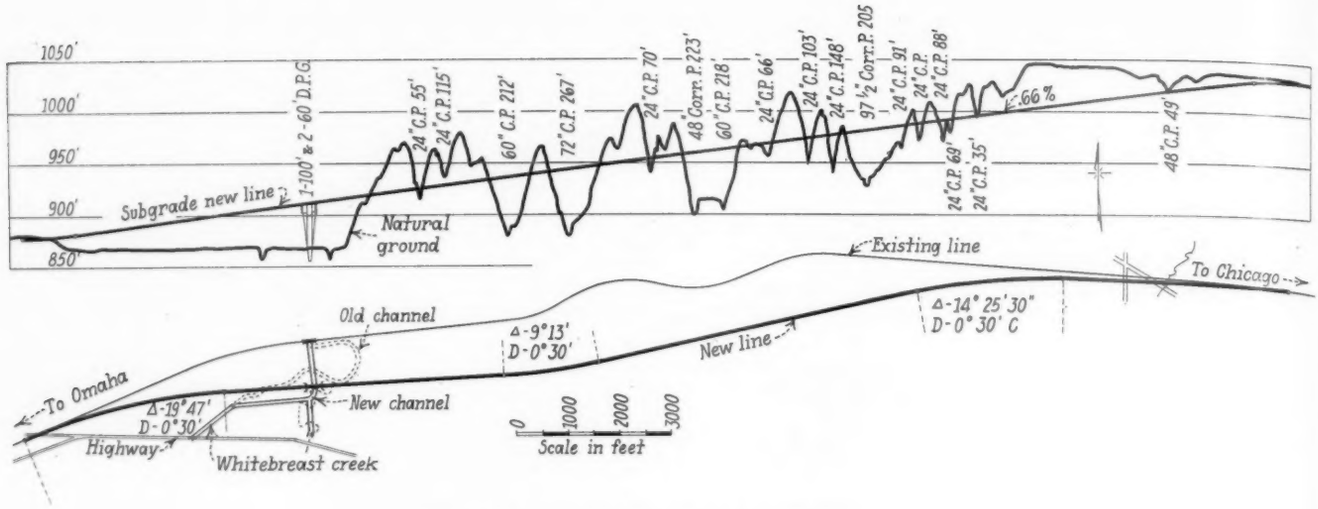
Drainage System in Long Cut

An interesting feature of this project is the drainage system that was installed in the large cut near the east end of the new line. In this cut, which consists of a heavy clay and which is approximately 3,000 ft. long, lateral drains consisting of 8-in. perforated corrugated metal pipe, spaced 25 ft. apart and each laid on a grade of 5 per cent, empty alternately into longitudinal 18-in. corrugated pipes on each side of the track. The latter pipes, which are perforated only on top, are placed 5 ft. 8 in. below the subgrade. The ditches for both the laterals and the mains were back-filled with gravel.

At intervals of 400 ft., the 18-in. mains empty into catch basins, each of which consists of a section of 34-in. corrugated iron pipe 84 in. long, placed in a vertical position with its upper end flush with the surface of the



View of the 97½-In. Corrugated Multi-Plate Pipe, Showing the Bracing That Was Installed to Prevent Distortion During Consolidation of the Embankment



Plan and Profile of the Line Revision at Chariton, Iowa

side ditch. Covers of creosoted timber are provided for the tops of these catch basins. In addition to serving as settling basins for silt and other material, the catch basins may be utilized as man-holes to provide access to the 18-in. pipe lines in the event they should require cleaning. At the outlet end of the 18-in. line on the south side of the track, where the water is diverted into a culvert under the roadbed, a concrete surge chamber was

Loading One of the Euclid Wagons

provided to break the flow of the water and to serve also as a catch basin for the deposit of silt.

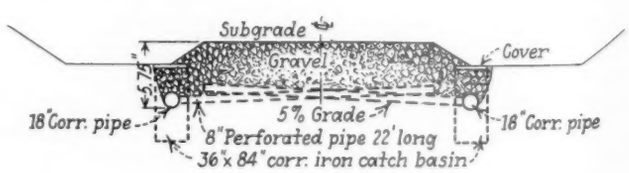
The largest waterway opening on the new line is at the crossing of Whitebreast creek, the channel of which was straightened between the old and new lines to eliminate a wide loop in the original course of the stream. The bridge at this crossing, which is provided with a creosoted ballasted deck, comprises a main span of 100 ft. deck plate-girders supported on concrete piers with pile foundations, with a 60-ft. deck plate-girder span at each end, the outer ends of which are supported on pile piers with concrete caps. Pile trestle approaches at each end give the bridge a total length of 277 ft. 4 in. between bulkheads. To secure the desired penetration into natural ground of the foundation piles under the piers at the outer ends of the 60-ft. spans, 50-ft. piles were used. Three rows of such piles, thoroughly cross-braced above the natural ground line, are provided at each pier, the two outer rows of the piles at each location being driven on a batter of 2 in. to 1 ft.

Other Waterway Openings

The other waterway openings on the new line consist of one 97½-in. corrugated metal pipe of the Multi Plate type, two 48-in. corrugated pipes, and one 72-in., two 60-in. and eleven 24-in. precast concrete pipes. Because of the extreme height of some of the fills under which they were placed, special precautions were taken to insure permanency of the alinement and tightness of the joints in the pipes and to prevent distortion or breakage, particularly of the larger sizes, during the placing and compacting of the embankment.

The 97½-in. Multi Plate pipe, which is located under a 57-ft. fill and is 216 ft. long, was assembled by bolting together curved sections 10 ft. long and of such width that seven of them were required to complete the circle. This pipe is made of 3-gage (¼-in.) metal. To counteract distortion of this pipe under load its vertical diameter was increased 6½ in. by jacking, and timber struts were installed to maintain the increased dimensions during consolidation of the embankment.

Both the 72-in. and the 60-in. concrete pipes are supported on reinforced concrete mats or cradles and, in addition, all concrete pipes are supplied with 1½-in. round tie rods. These tie rods, one of which is applied on the exterior of each side of the pipe in the plane of its horizontal axis, are hooked over the ends of the pipe and are equipped with turnbuckles at intervals of about 25 ft. for applying the desired tension in the rods. An ingenious device is employed for imparting pressure (or tension as the case may be) from the tie rods to the flanges of the concrete pipe sections for the purpose of holding the joints tightly together. This device, one of which is placed on each tie rod at every second pipe joint, consists essentially of two 5½-in. by ⅜-in. by 6¼-in. flat wrought iron plates and a hook bar which is made



Typical Cross-Section in the Cut Where the Sub-Drainage System Was Installed

from a 5-in. by 1⅜-in. by 6¼-in. wrought iron bar. Four bolt holes are provided in each plate, two of which coincide with corresponding holes in the hook bar. These parts are assembled by placing the two plates on opposite sides of the tie rod with the hook bar in between so that the hook engages the loop of a stirrup cast in the concrete of the flange. When bolts are inserted and tightened the device becomes an effective means of dis-

tributing stress from the tie rod to the flanges of the concrete pipe.

On the downstream side of the center line of the track the joints in the concrete pipe are held securely together by a direct pull exerted in the upstream direction by the hooks on the stirrups (all concrete pipe is laid with the flanges upstream), while on the upstream side of the center line the pull, which is in the downstream direction, is exerted by the pressure of the hook bars directly against the pipe flanges. These hook bars are not applied to the tie rods on the 24-in. concrete pipes. To prevent crushing of the concrete where the tie rods are hooked over the end sections, a bearing plate, 5 in. wide, which is bent to conform to the shape of the hook in the end of the rod, is fillet-welded to the inside of the hook. All parts of the tie rod assemblies are given a coat of red lead paint.

Where the 60-in. or 72-in. concrete pipes were installed in fills having a height of more than 30 ft. above the flow line, struts of 8 in. by 8-in. timbers were installed in the pipes on 3-ft. centers to prevent damage to them during the placing of the embankment. Special care was exercised in placing embankment material around the pipes and in each case the pipe was hand tamped for three-fourths of its height.

An interesting innovation is embodied in the devices that were installed for catching and holding drift material and for causing the deposit of suspended matter on the upstream sides of the embankment at the 72-in. concrete pipe and the 97½-in. Multi Plate pipe. In each case these drift catches comprise a row of 65-lb. second-hand rails placed on 4-ft. centers across the waterway and connected near their tops by another rail of the same weight which is wired to the uprights. These rails are solidly embedded in the ground and extend about 15-ft. above the bed of the stream. Strands of barbed wire strung between the posts assist in catching and holding debris while the retardation of the flow of water, and thereby the deposit of silt before it reaches the pipe, is accomplished by a solid gate of treated timber, 3 ft. high and 8 ft. long, which is hung from the top member of the fence by two cables.

The grading, bridge work, and other items incidental with construction were performed by the Edward Peterson Company, Omaha, Neb., while the sub-drainage system in the long cut was installed by the Drainage Engineering Company, Middletown, Ohio, all material being furnished by the railroad.

This line is being built under the general supervision of A. W. Newton, chief engineer, and under the direct supervision of C. L. Persons, assistant chief engineer. C. A. Melvill is resident engineer on the work.

Commissioners Hold Annual Meeting

Federal and state regulators devote most attention to motor transport, rather than railways, at Atlantic City session

WHEREAS the regulation of the railways was once the primary concern of the state commissions, it now comprises only one of many phases of their manifold duties. This fact was definitely exemplified in the program of the convention of the National Association of Railroad and Utilities Commissioners, which was held at the Marlborough-Blenheim hotel, Atlantic City, N. J., on November 10-13. In contrast with the conventions of former years, when two or more days were devoted to matters relating to the railways, the convention last week set aside only one day to railway subjects and a large part of the two sessions on that day was occupied in the discussion of motor transport regulation.

The chief item on the program, so far as the railways are concerned, was an address on Railway Reorganization by Charles D. Mahaffie, chairman of the Interstate Commerce Commission, which is abstracted on another page. Railway rates received brief mention in the annual report of the association's general solicitor, John E. Benton. Railway rates were featured also in the report of the Committee on Co-operation Between Federal and State Commissions, which reviewed the participation of the state commission in the various proceedings in the Emergency Freight Rate case and the Passenger Fare case. However, no time was given to this report in the convention program. Similarly, a report of the Committee on Railroad Grade Crossing Elimination and Protection failed of presentation, although a number of railway officers were in attendance for the express purpose of hearing that report.

The presiding officer during the convention was Thomas E. McKay, of the Utah Public Service Commission, who had been advanced from first vice-president to president in May, following the resignation of Frank E. Morgan, who has relinquished his position with the Alabama commission to accept appointment as district director at Atlanta, Ga., for the Bureau of Motor Carriers of the Interstate Commerce Commission. In the annual election, President McKay, and First Vice-President Alexander M. Mahood, of the West Virginia commission, were re-elected, while Nelson Lee Smith, chairman of the New Hampshire commission was chosen second vice-president. John E. Benton, general solicitor, Clyde S. Bailey, secretary and assistant general solicitor, and Robert E. May, assistant secretary, were also re-elected. It was decided to hold the next convention at Salt Lake City, Utah, on August 31 to September 3, 1937. Some 300 persons were registered at the Atlantic City meeting, including members of 4 federal commissions and 40 state and territorial commissions.

The first session was devoted primarily to salutations, including addresses by Harold G. Hoffman, governor of New Jersey, Charles D. White, mayor of Atlantic City, and Harry Bacharach, president of the New Jersey commission. However, with this exception, the association adhered strictly to the rule adopted several years ago under which addresses not pertaining specifically to problems of regulation were excluded.

In presenting a brief report for the Committee on Valuation, of which he was chairman, E. I. Lewis, director of valuation of the Interstate Commerce Commission, referred to recent court decisions bearing on the validity

of price indices in the finding of current value, because of the importance of devising means of expediting the disposal of cases. In conclusion, he stated that the courts are demanding that due process be not curtailed; that value be determined by consideration of all relative matters of record giving to each its appropriate weight; and continue to criticize the use of price indices unless shown to be applicable to, and representative of, price changes in the particular kind of property under consideration.

Taking cognizance of the many changes in the personnel of the state commissions that have taken place in the last few years, John E. Benton, general solicitor of the association, devoted a part of his annual report to an outline of the association's history, with particular reference to the establishment of a Washington office with a general solicitor in charge. While, he said, the original intent was to provide representation for the association in matters pending before the Interstate Commerce Commission, the work of the solicitor has been greatly expanded as additional federal regulatory commissions have been created.

Discuss Motor Transport Regulation

Greatest interest was manifested in the portion of the program devoted to the discussion of motor transport regulation, and it was evident that this interest was aroused not only by reason of the many new problems growing out of the efforts to establish the machinery for federal regulation, but also because the federal motor carrier act, which was fostered by the association, provides for participation on the part of the state commissions in interstate regulation through the agency of the so-called "joint boards." Therefore, although various phases of motor transport regulation were covered in the program, it was the effective functioning of the joint boards that was most actively discussed.

The discussion leader on this subject was Andrew Olson of Illinois, who cited some of the difficulties encountered by the state commissioners in making an appearance at all of the joint board hearings they are called upon to attend, and suggested that the Bureau of Motor Carriers might make a greater effort to meet the convenience of the state commissioners in setting the time and place of these hearings. Most of the points that he raised were answered in a discussion of W. A. Hill, chief of the section of complaints, Bureau of Motor Carriers, who gave a detailed account of the manner of scheduling the joint board hearings, and called attention to some of the difficulties that would be involved in efforts to meet the convenience of all parties to such hearings.

Reminding the association that it had strenuously opposed the provision of the law under which all hearings are conducted by a federal examiner, he called attention to the fact that several joint board hearings have been conducted with no more than one state representative present, and that in a few instances the examiner was compelled to conduct the hearing entirely unassisted. This statement created a decided furor and prompted A. R. McDonald of Wisconsin and H. L. Hooker of Virginia to remind the members of the strenuous efforts made by the association for a federal act in which the state commissions would participate in regulation of interstate transport on the highways, and declared that it would be exceedingly unfortunate if the states would lose their hard won prerogatives through failure to participate in the hearings.

Another point that was brought out emphatically was the problem of enforcement; attention was directed to need of adequate policing, which could be assured only by the diverting of an adequate portion of the taxes levied on motor transport to this activity. Since the details of motor transport regulation must necessarily fall on the states, it was felt that enforcement is necessarily a state function.

Carrier Insurance

The subject of insurance was presented by H. J. Waples of the Michigan commission, who reviewed the requirements as to insurance imposed on the motor carriers in his state, stating that they prohibited the granting of allowances to shippers who carried their own insurance. While this practice was formerly warranted, it is not justified now because the carriers are required to carry full insurance. Rates were formerly very high, he explained, because of the extreme prevalence of robbery and "hi-jacking," but this condition had been almost entirely overcome by effective police protection, so far as Michigan is concerned.

M. J. Foley of the Wyoming commission said that the amount of coverage required by either federal or state regulations is not an important matter because no specific amount would be adequate in all cases, but that the states could make special requirements to cover conditions encountered in the handling of highly valuable lading. He said, also, that the carriers were complaining of excessive insurance rates, a condition that they will no doubt endeavor to correct through legislation, even to the extent of demanding state insurance. There is need, also, he declared, for a uniform insurance contract that will eliminate the ambiguities of prevailing contracts. His observations with respect to rates were endorsed by others, one view advanced being that the current rates are based on general experience with motor trucks, whereas the segregation of the experience of regulated motor carriers would show that lower rates were justified.

Advocate Safety Regulations

In a brief report presented by Frank W. Matson of Minnesota, chairman of the Special Committee on Safety Regulations for Motor Carriers, attention was directed to the safety regulations prepared by the Bureau of Motor Carriers and offered a resolution (which was passed) tentatively approving these regulations and urging their adoption by the states. These regulations were discussed in some detail by H. H. Kelly, chief of the safety section of the bureau, who said that the provisions were now being revised on the basis of suggestions and comments that had been received from the motor carriers. He reviewed the subject matter of safety regulations from the standpoint of five main headings, namely, qualifications of the driver, driving rules, accessories or safety devices on the vehicles, accident reports, and hours of service. However, the discussion centered almost entirely around that portion of driving rules relating to speed. As pointed out by Mr. Kelly, the regulations establish 45 miles per hour as a prima facie speed limit on the ground that speeds above that rate comprise a zone of increasing hazard, and that in the event of accidents occurring at higher rates of speed the burden of proof should be on the driver.

This view was not generally concurred in by those present, several speakers being of the opinion that it would be impracticable to establish any maximum that would have country-wide application. In their opinion the setting of speed limits is something that would have to be left to the state authorities because of the wide differences in topography, character of the highways, etc.

The regulation of motor transport was covered also

in the report of the Committee on Motor Vehicle Transportation, of which F. J. Schaaf, director of the Department of Public Service of the State of Washington, was chairman. In this report, which was presented to the convention by title only and not discussed, the committee urged further extension of the authority of the states in the regulation of interstate carriers and reviewed the most recent court decision that has a bearing on the status of the contract carrier. An abstract of the report follows:

Report of Committee on Motor Vehicle Transportation

The operation of the law to date indicates that its successful administration will depend in no small degree upon the effective functioning of the joint boards. A survey of the work done by those agencies thus far justifies the approval of the idea voiced in the past by this association and fills us all with hope that the federal act will in fact be so administered as to secure the greatest effectiveness in interstate regulation.

It is believed that the majority of problems arising under the motor carrier act are sectional rather than national in scope, and that even greater authority might be delegated to the various district officials, even to the extent of permitting them to determine questions of policy affecting their particular areas. Many of the regulatory problems are psychological in character and the effectiveness of government regulation depends in large part upon co-operation from the industry.

It is hoped that the Interstate Commerce Commission will find it possible to adjudicate "grandfather" rights in the very near future so that it can give early attention to the applications of the new operators and the elimination of new illegal operations which got under way because it was impossible for the commission to head them off. We do not believe that protests lodged by competing carriers of one type or another should be permitted to hold up the adjudication of "grandfather" rights for too long a period. It is well known that some of the larger transportation agencies have adopted the policy of protesting practically all "grandfather" applications. If time is to be taken to investigate all such protests it will be many years before the commission can settle the all-important question of existing or fixed rights, and in the meantime the administration of the act is bound to bog down.

Enforcement of the Act

We cannot be blind to the fact that some operators are taking advantage of the necessary delay in the enforcement of the federal act and are reaping pecuniary profits from their illegal conduct. Participation in illegal operations is not confined to large operators. Indeed the I.C.C. will find, no doubt, that the worst offenders and those who will do the most to demoralize regulation will be the hundreds of small operators who do not, or will not, take the trouble to become acquainted with the laws and regulations. These operators have always caused the state commissions the most trouble and we believe that the mere entrance of the federal government into the field will not produce any magical changes in the intelligence or consciences of such operators.

In view of the delays necessarily incident to bringing the federal act into full operation throughout the country consideration should be given to the question whether it is advisable for the I.C.C. to clothe certain employees of the state commissions with authority to act as enforcement agents for the federal commission. The state people are in constant touch with local conditions and in many cases would be able to solve interstate problems within their respective states with a great saving in time and expense.

Contract Carriers

This report would not be complete if it failed to give attention to the subject of contract carriers and their regulation. Transportation men have always contended that the stability and dependability of the entire transportation service depend upon the proper regulation and control of contract carriers and the experience of regulatory authorities establishes the validity of that contention. Many have felt that there would be no certainty about the state's regulatory authority over contract carriers under the various statutes unless that authority was firmly grounded upon the principle that contract carriage, like the business of a common carrier, was affected with a public interest.

In 1935 the Supreme Court of Wyoming sustained the constitutionality of that state's statute as it affected contract carriers, but did not say so definitely and in a decisive manner. In another important decision of the year, however, the Supreme Court of the State of Washington ruled definitely and clearly that the Washington statute granting authority to regulate contract carriers was valid because the business was affected with a public interest. In disposing of the objections to the statute the court said: "But, conceding that the distinction attempted to be made by respondents is sound, we have no hesitancy in holding that the transportation of property on the public highways for gain is a business affected with a public interest. And on this ground alone, the order is sustainable—authority to make it having been conferred by the act."

Thus we have for the first time a clear declaration by a court of last resort that the business of a contract hauler may be fully regulated on the ground that it is a business affected with a public interest. It is regrettable that the Washington decision was not appealed to the Supreme Court of the United States, and it is suggested that every effort be made to submit the question again to that final arbiter in some clear cut case so that we will have a decision which must be followed in every court in the land.

Railroad Reorganization

By Charles D. Mahaffie*

From the time of the first reorganization to the present, there have occurred many breakdowns in the financial structures of American railroads. It has been estimated that since 1870 there have been more than 1,000 railroad receiverships, the average duration of which has increased gradually from approximately 2½ years to more than 4 years. The magnitude of this question becomes evident when it is realized that from 1915 to 1933 there were 31 Class I railroads reorganized through court procedure. Today there are 90 railroads, owning 64,981 miles of road, and having a total capitalization of $5,265,196,705, in receivership or undergoing reorganization under Section 77 of the federal Bankruptcy Act.

Reorganizations have been of different kinds. Some have been thorough-going, others little more than slight rearrangements of capital structures. The financial reorganizations occurring during the period 1915 to 1933 were accompanied by a decrease in the stated value of the total assets of the companies from a total of $3,412,745,746, to an aggregate of $2,964,-109,935. The total capitalization—long-term debt plus capital stock—was decreased from $3,071,338,142 to $2,764,828,192, a decrease of $306,509,905, or 9.98 per cent. Of the 31 companies, 8 actually had a larger total capitalization after reorganization than before.

These reorganizations, as well as practically all of those of prior dates, were effected through equity receiverships, and for many years there has been criticism of reorganization effected by this procedure. From time to time suggestions had been made that legislation be enacted to provide for binding recalcitrant creditors and for the elimination of the necessity of sales and of ancillary receiverships. Such legislation was urged primarily by those customarily representing bankers. On the other hand, there were those who contended that legislation should be enacted to contol the actions of those normally dominating the reorganization of corporations. During the recent depression, there were still others who urged that corporate debtors, as well as individual debtors, should be relieved to some extent from the heavy burden of existing debts.

Section 77

Finally, and as a result of the agitation throughout the country, Congress passed, as part of the new Chapter VIII of the Bank-

* Chairman Interstate Commerce Commission.

ruptcy Act entitled "Provisions for the Relief of Debtors," a new section numbered 77, entitled "Reorganizations of Railroads Engaged in Interstate Commerce." Prior to that date railroad corporations were excluded from the operation of the bankruptcy law and the commission's functions in reorganizations had been confined to passing on applications for authority to issue securities under Section 20a of the Interstate Commerce Act.

Section 77 eliminated the necessity for ancillary receiverships and judicial sales, and also provided that a plan, when confirmed, should be binding on all security holders of each class of which two-thirds in amount had accepted the plan. As reflecting the views of those seeking to check the powers of the persons or groups who formerly dominated reorganizations, Section 77 vested in the commission broad jurisdiction over the entire reorganization as well as over the compensation which might be allowed trustees and other parties participating in the reorganization, and imposed many affirmative duties on the courts while also increasing their jurisdiction.

Very shortly after the enactment of Section 77, railroad companies began to file petitions for reorganizations with the result that as of today a total of 44 such petitions have been filed. It soon developed, however, that reorganizations could not be effected as expeditiously as had been hoped. In an effort to eliminate what were considered the main obstacles to fair and equitable reorganizations, the section was extensively amended by Congress. These amendments became effective August 27, 1935.

As stated in the reports of the congressional committees recommending the amendments, a minority of more than one-third of any class of creditors could obstruct and prevent the approval of any plan. Accordingly, the section was amended so as to provide that two-thirds, in amount, of those of each class voting for a plan will bind those failing to vote. The section, as amended, also provides that the court may make effective a fair and equitable plan where the parties do not agree.

Among other amendments is the mandatory requirement that the judge shall appoint trustees. Instead of appointing a trustee or trustees from a panel designated by the commission, he shall select the trustees in his discretion, but subject to the ratification of the commission. Another is that before protective committees may function legally in railroad reorganizations, authority for so doing must be secured from the commission.

As To Its Constitutionality

From the days of the Constitutional Convention, in 1787, to the present time, there have been vigorous debates as to what constitutes law on the "subject of Bankruptcies." The basic constitutionality of Section 77 has, however, been sustained unanimously by the United States Supreme Court in Continental Illinois Bank & Trust Co. v. Chicago, Rock Island & Pacific.

It also would appear that the doubt as to the power of Congress to enact legislation making a corporate reorganization binding on objecting stockholders once the approval of a certain percentage of each class of creditors and stockholders has been obtained, was removed by the Rock Island decision, and by the decision in Louisville Joint Stock Land Bank v. Radford. This latter decision, as well as that of the Circuit Court of Appeals, Sixth Circuit, in re Tennessee Publishing Company, however, is thought by some to create doubt as to the power given to a court in sub-section (e) of Section 77 to confirm, under certain circumstances, a plan of reorganization that has not been accepted by the creditors and stockholders. While it is settled that the prohibition in the Constitution against the impairment of the obligation of contracts does not apply to the Congress, equally it is settled that a deprivation of property without due process of law is contrary to the Fifth Amendment.

While as yet there are few court decisions in which the provisions of Section 77 have been judicially interpreted, resort may be had to decisions under Section 77B of the Bankruptcy Act providing for corporate reorganizations since many of its provisions are quite similar to those of Secton 77. Although that section is not quite as old as Section 77, by reason of the fact that many of the cases under it involve properties and financial structures of less extent and complexity than those of railroad corporations, greater progress has been made in effecting their reorganization than of those railroads that have filed petitions under Section 77.

The basic theory on which Section 77 is framed is that of a largely voluntary readjustment of top-heavy financial structures. Possibly this theory relies too greatly on human reasonableness. Creditors and stockholders may realize the necessity of sacrifice. But they are likely to be reluctant to have it become too personal. In equity receiverships stockholders usually have maintained their position, and, incidentally, control of a property by paying assessments, or in some other form furnishing new money to the enterprise. Section 77 proceedings, so far, generally do not contemplate that burden. The question presented is how much, if any, sacrifice properly can be required of the bondholders while the debtor (stockholder) retains ownership or control of the property.

Economic Factors Involved

Perhaps I have unduly emphasized the legal phase of reorganizations because, after all, reorganizations from a practical standpoint are essentially matters of finance and economics. Experience has shown that regardless of the amount invested in the physical properties, the success or failure of a railroad is dependent upon its earning power. And since railroads must operate in periods of depression as well as in periods of prosperity, their financial structures must be shaped with these facts in mind. Fixed charges do not decrease in proportion to decreased revenues. Consequently, such charges must be brought into line with the earning power of the particular road involved. While railroad revenues are increasing with increased general business direct competition has by no means decreased. Other factors such as the relocation of industry to reduce transportation costs, and the use of power produced without railroad transportation of fuel, must be considered in appraising the railroad future.

Considerations such as these make the problem of what financial structure will meet the test laid down by Congress a difficult one. But the task is not impossible, and the Interstate Commerce Commission expects to do all that is within its power to see that the reorganization of those railroads that have filed petitions under Section 77 is effected in such manner as to provide capital structures and cash resources which will give them the best available basis to function continuously as going concerns.

Learned Group Discusses Railroads

(*Continued from page 752*)

that time, whereas there has been a considerable improvement in hours of labor in other industries, notably that effected under the NRA. As to Dean Garrison's statement in behalf of union-management co-operation toward meeting problems of mutual interest, Mr. Oliver stated that the unions had taken the initiative in securing regulation of competing forms of transportation, and that they had fought consistently in behalf of the express companies in the competition they are meeting from the parcels post.

Formal discussions were lead by Winthrop M. Daniels, professor emeritus of transportation, Yale University, and Dr. C. S. Duncan, economist of the Association of American Railroads. Commenting on some of the criticisms of the speakers from the investors' standpoint, Dr. Duncan remarked that in recent years some of the institutional investors had acquired local government bonds and put them in their portfolios alongside their railroad bonds, these government bonds having been issued in many cases to build highways calculated to destroy the investment in the railroad bonds these institutions already held. Professor Daniels quoted the late Will Rogers to the effect that the nation was engaged in building "a hard-surfaced highway to the door of every poor-house in the country."

Passenger Officers Meet at New Orleans

Radical changes in equipment forecast for the near future—Program for new cars must be decided upon

RADICAL changes in passenger cars because of new trends in travel were forecast at the seventy-eighth annual meeting of the American Association of Passenger Traffic Officers held at New Orleans, La., on November 12 and 13, President C. C. Howard, passenger traffic manager of the Erie, presiding. This forecast was made during a discussion of high-speed trains and the resulting new demands for better accommodations. It was the opinion of F. W. Conner, assistant passenger traffic manager of the Pennsylvania, that, with speed now a dominating factor in travel, railroads must develop trains that will average 90 to 100 m.p.h., including stops, and, because of the evolution of travel standards, must provide a new type of car with different seating arrangements and accommodations. Because of the keenness of competition, an organized program for developing these improvements must be decided upon within a year.

Officers elected for the ensuing year are: President, George P. James, general passenger agent of the Atlantic Coast Line at Washington, D. C.; vice-president, O. P. Bartlett, passenger traffic manager of the Southern Pacific at Chicago; secretary, W. C. Hope (re-elected); and assistant secretary, B. D. Branch, general passenger agent of the Central of New Jersey at New York.

Train for Secondary Lines Is Needed

The need for further improvements in passenger cars was also emphasized in the report of the Committee on Developments and Improvements in Train Service and Equipment, of which W. B. Calloway, general passenger traffic manager of the Baltimore & Ohio, is chairman. An abstract of this report follows:

"The developments that have been made and that are in hand, all tend toward the ultimate results of greater speed, greater comfort and lowered costs of operation. Your committee does not believe that the experiments have reached a sufficient development to justify any recommendation as to a standard in any of the essential elements but, on the contrary, believes that a greater ultimate development will be brought about by the diversified types of motive power and equipment that are being experimented with, than through a plan that contemplates the use of some uniform type.

"There has been less marked development in Pullman, or so-called 'first class' equipment and accommodations, than in the coach service. Some of the new western transcontinental trains have incorporated new attractive features in their bed-room, compartment and drawing-room accommodations. The so-called 'open berth' car still seems to remain quite a problem, the greatest of which seems to be the utilization of the upper berth, which remains largely waste space in most cars. The Pullman Company has had in experimental service an articulated double unit, incorporating a full two level bed-room and a room lounge observation car, but, so far as your committee is aware, has not, to date, developed a type of car that will supplant the open berth car that solves the problem of the unused upper berth.

"Generally speaking, it seems safe to say that the day of the 80 or 90 ton car is past and that equipment, either coach or Pullman, for the future will be much reduced in weight. One type of train unit not yet developed for general application is the light-weight, two or three car unit. It should have a reasonable initial cost and a minimum operating expense, (less than 50 cents per mile), and be able to handle the so-called 'local' service on secondary lines. The power plant for such a unit is a problem, for it must be produced at a cost that is justifiable considering the type of service and the light volume of traffic that can be expected on the so-called secondary lines."

Efforts being made by the Pullman Company to meet the new trends in travel were described by E. P. Burke, passenger traffic manager of this company. Studies made to determine what type of accommodation should be adopted as standard, reveal that while the trend is toward room cars, there is still a demand for open section cars. On experimental runs of bed-room cars during the last four years, ⅔ of the available rooms were purchased by passengers even though the cars were not advertised.

High-Speed Trains Operated at Low Cost

This discussion of equipment followed summaries of the results of high-speed trains. Robert Thomson, passenger traffic manager of the Chicago & North Western, reported that the high-speed trains operated by this railroad and the Union Pacific have not only created a substantial amount of new business but have attracted the attention of a vast number of people, and, with those of other railroads, have done an immense amount of good for the whole railroad industry. On the North Western the streamliners have produced gross revenues averaging close to $3 per train mile, thus affording a net revenue of $1.65 after deducting wages, fuel, repairs, other expenses and depreciation. Of the passengers on these trains, 30 per cent are from other forms of transportation. Out of 2383 answers to a variety of questions asked passengers, 577 mentioned speed as a particular attraction, 522 air-conditioning, 204 courteous service and 225 dining car service. The revenue of the "400", he said, was 48 per cent higher in September than a year ago.

Albert Cotsworth, Jr., passenger traffic manager of the Chicago, Burlington & Quincy, said that while on its original run the Mark Twain doubled its traffic. Its revenue averaged $1 per mile, and all costs 70 cents, including 37 cents for maintenance and 21 cents for depreciation. In the Denver service, the original Zephyr did not miss a trip and was on time 158 times out of the 161 trips. When air-conditioned steam trains were substituted on the original runs of these

Zephyrs while they were in the Denver service, there was a drop in traffic amounting to 30 per cent at the end of 120 days.

In the Twin Cities service, where Zephyrs have operated continuously, the business has continued to increase. The Twin Zephyrs have each run 884 train miles a day and, with this performance, have cost 51.3 cents a mile, for the 15 months' period from June 1, 1935, to August 31, 1936, divided as follows:

	Cents per mile
Maintenance of power plant	2.
Maintenance of train	3.5
Fuel oil	1.3
Lubricating oil	0.07
Wages of crew	19.
Train supplies	2.2
Dining car loss	5.8
Station terminal & joint facility costs	3.8
Cost of supporting steam trains	5.
Interest, taxes and depreciation	8.6
	51.27

G. B. Haynes, passenger traffic manager of the Chicago, Milwaukee, St. Paul & Pacific, said that the character of the business of the Hiawatha necessitated several changes in its equipment which were incorporated in the new cars recently placed in service. The combination dining car and tap room were inadequate so a dining car with a capacity for 48 was added, while the seats in the tap room were increased from 25 to 48. At the same time more parlor cars were added, with the result that the train now has nine cars which have the same weight as the eight previously carried. Since the train has been in service an average of 713 tickets have been lifted on all units each day. During the first year of operation the revenue of the train, not including that from dining cars, has average $3.29 a train mile, while during the four months from June to September it has averaged $3.98 per mile. The expense of operation totalled $1.08 for the first year, and $1.13 for the four months, including wages, fuel, water, lubricants, repairs, terminal charges, depreciation at four per cent and interest.

F. W. Conner, assistant passenger traffic manager of the Pennsylvania, described that railroad's electric operation, in which trains of 13 cars are operated at 65 m.p.h. The parlor car service on these trains has remained at the same level as prevailed prior to rate reductions.

J. V. Lanigan, passenger traffic manager of the Illinois Central, said that the Green Diamond has enjoyed a heavy patronage, the sale of seats per trip averaging 110 out of a total of 120. Because of the demand it is necessary to sell reserved coach seats. With this practice the amount of business for the train can be estimated accurately two hours before train time and an extra section made up if needed. Extra sections are operated regardless of the number of overflow passengers in order not to disappoint patrons.

J. W. Switzer, general passenger agent of the New York Central, reported that the business of the Mercury has been so great that two more coaches are being constructed which will give the train a total of nine cars. The train is earning about $3.50 a mile eastbound.

G. M. White, general passenger agent of the Gulf, Mobile & Northern, described the popularity of the Rebel.

P. J. Neff, assistant chief traffic officer—passenger of the Missouri Pacific, reported that the steam train placed in service by the Missouri Pacific between Omaha and Kansas City on a fast schedule first lost traffic but increased its traffic 40 per cent in six months in competition with the Burlington Zephyr. Because of these results, he said, the question resolves itself into determining whether traffic development can be accomplished with present equipment, or whether it can only be increased by costly new trains. If the latter are the answer, then all railroads must immediately spend large sums of money to replace their present trains.

Aviation Making Astounding Progress

One of the most impressive subjects considered at the meeting was the report of the Committee on Commercial Aviation Development made by Chairman C. E. McCullough, general passenger agent of the Pennsylvania, which showed astounding increase in air traffic. The miles flown by commercial transport planes, domestic and foreign, show an increase of 495 per cent over 1928. Passengers carried in 1935, 860,761, is an increase of 1,631 per cent over 1928, when only 49,713 passengers were carried. The passenger fare per mile has fluctuated considerably upwards and downwards since 1928, but now seems pretty well established at a little under six cents per mile. A reduction was just recently made in fares between various highly competitive points such as Chicago and New York, Chicago and Kansas City, New York and Los Angeles, St. Louis and New York, etc., which illustrates the flexibility of commercial aviation's basic fare fabric. Changes are made to meet competition of railroad operations, both as to fares and speed.

Express carried has grown from 35,376 lb. in 1928 to considerably over five and one-half millions in 1935, an increase of 15,480 per cent. Mail carried has likewise made an astounding leap in figures—from over four million lb. in 1928 to nearly fourteen million lb. in 1935, an increase of 239 per cent. (Hawaiian air mail operations not included in these figures).

Accidents of all kinds in 1935 numbered 62, of which 8 were fatal, and included 15 passengers killed. The miles flown per fatal accident, however, were approximately eight million, and passenger-miles flown per fatality over twenty-four million, which is a vast improvement over 1934 when there were 73 accidents of all kinds, 10 fatal, with 21 passenger fatalities, with a trifle less than five million miles flown per fatal accident and a little over ten million passenger-miles flown per fatality.

The causes of accidents also show a marked change, those charged to personal errors being 27½ per cent in 1935, as compared with over 36 per cent in 1934. Airplane failures were charged with 16 per cent in 1935 as compared with 20 per cent in 1934. Other causes were power plant failures, weather and miscellaneous. Unfortunately, no figures for 1928 are available for comparative purposes.

Average flights, and flights completed, also show interesting developments, although no figures for 1928 are available with which a comparison can be made. The average flight in 1935 was more than 420 miles as compared with 407 miles in the year previous. Flights completed in 1935 represented 94½ per cent as compared with 94 per cent in 1934.

Baggage a Problem

The carrying of baggage into cars by passengers was reported to be becoming a serious problem for with increasing patronage available space will not accommodate the several pieces of luggage carried by passengers. It was suggested that in order to discourage the practice of carrying luggage into cars with the resulting discomfort to passengers, the railroads conduct a campaign to educate patrons to use baggage checking facilities. It was also recommended that the railroads improve baggage service so as to facilitate checking.

Salesmanship

A discussion of salesmanship showed that a large number of railroads are endeavoring to improve the selling

ability of their employees. Schools and instructive motion pictures and sound slides were among the devices most frequently used. It was agreed that well designed talking motion pictures are the most effective devices, but the cost, about $20,000 is prohibitive. Commissions and bonuses as a means of stimulating ticket sellers and thereby increasing revenues was discussed, but because of the varying conditions under which ticket sellers work no plan which would be fair to all was suggested. However, a committee was appointed to study the problem and endeavor to formulate a plan for both stimulating and rewarding sales efforts.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended November 7 totaled 759,318 cars, an increase of 104,371 cars, or 15.9 per cent, as compared with the total for the corresponding week of last year but a decrease of 69,705 cars, or 8.4 per cent, as compared with the corresponding week of 1930. Partly because of the seasonal decline in traffic and partly because of election day there was a decrease of 54,857 cars as compared with the week before. All commodity classifications except grain and grain products showed increases as compared with last year. The summary as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ending Saturday, November 7

Districts	1936	1935	1934
Eastern	157,081	139,387	128,064
Allegheny	149,996	123,214	110,476
Pocahontas	53,159	48,621	42,293
Southern	108,912	92,434	88,982
Northwestern	108,902	85,745	74,849
Central Western	118,923	109,356	96,902
Southwestern	62,345	56,190	53,224
Total Western Districts	290,170	251,291	224,975
Total All Roads	759,318	654,947	594,790
Commodities			
Grain and Grain Products	29,327	30,589	27,266
Live Stock	19,077	18,930	23,085
Coal	151,184	124,470	126,344
Coke	11,314	6,715	5,485
Forest Products	32,548	27,701	21,394
Ore	38,791	17,454	6,852
Merchandise L.C.L.	168,551	164,363	160,014
Miscellaneous	308,526	264,725	224,350
November 7	759,318	654,947	594,790
October 31	814,175	681,998	613,048
October 24	815,972	710,621	624,808
October 17	826,155	732,304	640,727
October 10	820,195	734,154	636,999
Cumulative Total, 45 Weeks	31,033,533	27,332,082	27,105,230

Car Loading in Canada

Car loadings in Canada for the week ended November 7 totaled 56,860, as against 57,983 for the previous week and 52,218 cars for the corresponding week last year, according to the weekly statement of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
November 7, 1936	56,860	26,847
October 31, 1936	57,983	25,943
October 24, 1936	59,955	26,219
November 9, 1935	52,218	22,455
Cumulative Totals for Canada		
November 7, 1936	2,139,499	1,045,920
November 9, 1935	2,047,163	958,501
November 10, 1934	2,019,290	965,322

Odds and Ends . . .

International Railroads

There are exactly 50 railroad crossings of the United States-Canada international boundary, excluding car ferries and counting different railroads using the same track or set of tracks only once. This is far more crossings than any other boundary in the world can show; the United States-Mexican frontier, for example, has only 11.

Twin Careers

The Reed twins, Sherman and Sheridan, of Painesville, Ohio, have enjoyed remarkably parallel railroad careers. Both entered the service of the Baltimore & Ohio in 1900 as engine wipers. Two years later, both became truckers in the freighthouse. Another two years and they were both made car inspectors, in which positions they have continued until both have accumulated 36 years' seniority with the B. & O.

Like Father Like Son

Herman Wisch, mayor of Brandsville, Mo., is 88 years old and 6 ft. 5 in. tall. In the Franco-Prussian war of 1870, he won no less than eight medals for conspicuous gallantry in action, fighting for Germany against the French. Herbert Wisch, his son, an engineman in Illinois Central suburban service at Chicago, is also 6 ft. 5 in. tall, and also won several medals for conspicuous gallantry in action. There is this difference, however. The son was in the American army fighting with the French against the Germans.

"Reverse English"

For the convenience of those who have been engaged in catering for the summer holiday-makers, the Great Western of England has arranged special excursions during October from the seaside and inland resorts on its system to London and other big provincial towns. These excursions will be at the same cheap rates enjoyed by the summer holiday-makers, and will enable hotel proprietors, boarding house and apartment keepers and those in kindred trades, to enjoy a well deserved holiday.

Transatlantic Air Pilot Former Railway Man

Dick Merrill, noted airplane pilot who recently took Harry Richman safely across the Atlantic and back, was a locomotive fireman for the Illinois Central at Jackson, Miss., several years before and after the World War and a locomotive engineer from 1920 to 1925. Visiting aviators at Jackson lured him away from the railroad during the latter year. His airplane service has been principally as a mail pilot on the Eastern seaboard. One of his airmail exploits was saving a farm family from a night fire by circling low enough for the noise of his motor to awaken the sleeping members.

Georgian Mansion Crosses England

A British railroad recently handled an entire Georgian mansion across England in a few hours, in one of the most ambitious moving feats ever attempted. Captain Schreiber, retiring chief constable of Ipswich, in Suffolk county, loved Brooks Hall, his fine, old red-brick Georgian mansion at Ipswich, but he loved Somerset County with equal intensity and could conceive of no other place so desirable for his years of retirement. And, fatally it seemed to him, the mansion and the county of his choice were separated by the whole breadth of England. To bring them together seemed hopeless. But an enterprising builder heard of the captain's quandary, and immediately consulted officials of the London & North Eastern. Between the captain, the builder and the railroad, the old house was carefully demolished, and 17 carloads of bricks and masonry, fruit trees, bins and outhouses, to say nothing of four large container cars of furniture, left Ipswich station, on the London & North Eastern, for South Cheriton in Somerset. There Brooks Hall rose again, beam by beam and brick by brick, a reincarnation in masonry, disappearing from Suffolk, coming to mellow life again, magically, in Somerset.

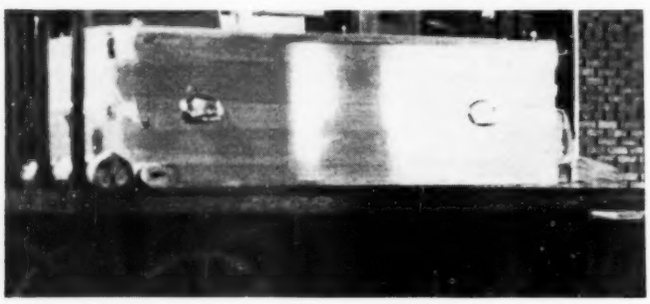
Communications and Books . . .

Handling Caskets

CHICAGO.

To the Editor:

It has occurred to me many times that there is very little consideration given to the handling of caskets on trains and in baggage rooms, the caskets often times being piled on the same truck with express packages, as is shown by the attached photograph. It would be a very simple matter to have one baggage float draped in crepe to carry caskets, so that when the family of the deceased had occasion to call at the baggage



Caskets Should Be Draped With Crepe

room to make shipping arrangements, it would not be greeted by the sight of the casket on a truckload of miscellaneous articles. Since most baggage floats have removable stakes, it is possible to install a temporary framework for supporting the crepe drape. The framework could be made collapsible so that it could be stored easily.

A SUPERINTENDENT.

An Indignant and Dissatisfied Traveler

SAGAMORE HOTEL, ROCHESTER, N. Y.

TO THE EDITOR:

I am well aware of the fact that railroads depend upon freight for the major share of their revenue. I realize that their passenger service is an obligation forced upon them by the fact that people simply insist upon traveling.

I understand that, since intelligent young men have discovered that money is to be made from other forms of travel than railroads, such phenomena as service have come into being; and that from their initiative, the railroads have taken their cue.

I also know that insofar as my experience goes (and I travel on railroads not less than five thousand miles a year), service has been nonexistent until the past very few years (excepting the B. & O. and Union Pacific).

I am an average man with an average income. I realize that the dining car department is expensive to operate; I also realize that that is not the point insofar as my income is concerned. I know how much food costs and how much profit is anticipated. This is not compatible with paying thirty cents for an egg salad sandwich, or ten cents to a Union News vendor for coffee which has been sweetened, not to my taste, but to that of the Chinaman in the back row.

I have been shunted and slammed, bunted and rammed through the Albany, East St. Louis, Washington, Richmond, Jacksonville, Kansas City, Atlanta, Memphis and a hundred other yards until I could have been calmed by dynamite. I have sat up for hours in poorly ventilated, poorly furnished coaches until my lungs and anatomy have screamed for mercy. I have suffered unbelievable embarrassment, humiliation and anger in the hands of octogenarians, who because of a far over-valued law of seniority have asserted their permanence by outrageously, unnecessarily and vulgarly insulting me. I have experienced similar trials almost invariably in my attempts to obtain information and/or reservations from taciturn, fusty, acrimonious station agents. I have been rudely roused from slumber by insensible porters who desired to have their cars shipshape by arrival time.

In fact, and I am risking boring the reader, in spite of my intense enthusiasm for the idea and organization of railroads, I have never been treated with as little respect, consideration, attention and courtesy as when I have traveled on one.

And, worse than this, I still am being treated the same way.

I realize that "great strides are being made" and that the railroads have finally aroused themselves from a fifty-year slumber. But must I enthuse because there are a few new fast trains with bright, comfortable equipment and pleasant service? (Even on the streamliners this is not entirely true in regard to service.)

No, I am sorry to say that not only cannot I enthuse, but I am definitely commencing to hope for the success of any transportation system which will manage to provide me with the comfort, speed and service to which I feel and know my money entitles me.

In the event that this causes teeth gnashing from railroad dichards, I shall be happy to describe in detail innumerable incidents which have occurred to me in the past five years and which would justify my indignation to those interested in checking up on a dissatisfied traveler.

ALEXANDER WILDER.

Some Notes on an Adopted Child — Streamlining

NEW CANAAN, CONN.

TO THE EDITOR:

Future historians, or commentators on industrial development, are likely to refer to the present time as the era of streamlining; a period in which certain fundamental and elementary principles of dynamic design, given spectacular prominence by astounding airplane development, have been seized upon by sales managers and advertising promoters hard pressed for new talking points, and superficially applied to everything from automobiles to slot machines.

While the term is fairly new, such basic principles of streamlining have long been recognized. Wind tunnels are a comparatively recent development and the resultant airplane designs still something of a popular novelty, but the essentials of streamlining have been applied for years by marine architects and naval technicians, from the underwater lines of a battle cruiser to the rounded hemispherical nose and long tapering after-body of the fleet torpedo.

Other long-standing applications may be seen in any hydro-electric development, the so-called "streamlining" principles being present in reverse form in every penstock, well designed turbine casing or impeller, or other well planned devices for the efficient transmission or utilization of hydraulic power. In case of a solid body moving through a fluid, the shape of that solid body must preferably be such as to cause the least fluid disturbance by its movement; in the reverse hydro-electric application, the shape of all passages and channels must be such as to cause the least internal disturbance of the flowing water. This is all there is to it—the beginning and the end. Streamlining to the engineer is a result of the application of these principles—it is *not* a style, color or magical shape, possessed of certain potent charm.

A few years ago the Union Pacific Diesel-electric M-10001 and the Burlington Zephyr trains introduced certain new features to railroads, among them refinements and simplifications in external contour. These two trains, and their sixteen-odd successors, immediately caught the popular fancy, at a time when traffic and advertising departments badly needed a new slogan and focal point for popular attention, and the railway "streamlining" era was born.

Now, far be it from the writer to imply that any child, even an adopted one, is unworthy of its parents, be they legitimate or otherwise. But in common with most children, it should be the parental duty to see that the child's talents and abilities are properly guided into productive channels, instead of being hurriedly exploited for the neighbors' edification.

Let us see how this general simile applies. In the case of air-

planes, naval architecture or hydro-electric machinery, streamlining is a functional result of the most correct and meticulous application of basic principles pertaining to the particular art—it is a natural outcome of correct fundamental design and internal construction, just as in the case of human anatomy a beautiful figure is the result of proper bone structure and muscular development. The same applies to the design of the Union Pacific and Burlington trains. In each case the initial objectives were high sustained speed, greater safety, increased comfort and low operating cost.

The achievement of such objectives dictated the use of Diesel electric power, in order to secure the requisite high ratio of horsepower to weight, together with greater physical flexibility in disposition of component mechanism, a general cylindrical form of car body, articular truck suspension, and the elimination of extraneous protuberances.

Now, this is the important point, the natural and efficient application of these available component elements permitted and suggested the further refinement of streamlining, but it should be appreciated that such was a functional result, not a primary requisite, to which all other elements were subordinated.

In contrast to this radical but logical development, let us consider recent attempts to fit the steam locomotive to the momentary trend. The writer is in entire sympathy with anything that can be done to improve its appearance, for though no doubt the most powerful and efficient of any, the American locomotive has never been a thing of beauty. In fact, it has been reported that once the running gear, boiler and firebox were in position, various accessories were thrown across the erecting shop and stuck where they landed, the cab then being added in an ineffectual attempt at concealment.

There can be no argument as to the possibility of improved appearance, and its value in the increasingly important field of public relations. Practically every man still has a remnant of his boyhood fondness for trains, and the steam locomotive will for a long time to come remain as one of the virile factors that conquered time, space and a continent. But for heaven's sake, if the American locomotive must give up its rugged individualism in favor of modernization, let such reconstruction be virile and genuine, and appeal of line based on functional components instead of a camouflaged pandering to popular fancy, the creation of certain industrial stylists, some of whom flit with the greatest of ease from window dressing and stage productions to railroading.

To be more specific, let us consider several of the more recent products of this school, as exemplified by the New York Central Mercury, the Commodore Vanderbilt, and the Pennsylvania 3768. In the first case we find a comparatively old locomotive, a Pacific of 1926 vintage. This engine was refitted at the West Albany shops, the original drivers being replaced with wheels of the Boxpok type, the locomotive then being camouflaged by hiding it beneath a canopy supposedly harmonizing it with the rest of the train. Wheel centers were painted aluminum and lights were provided to illuminate the running gear, and so, with this simple beauty treatment, it stands as a supreme achievement of American railway engineering.

The new 3768 of the Pennsylvania is apparently a similar modification of a PRR class K4s Pacific type, which has been similarly streamlined by an all enveloping cowling over the boiler and a sheeting extending down from the running board and around the locomotive. Otherwise, the mechanism is essentially unchanged. A particular feature of design is the rubber bath curtains on each side, between the tender and cab. While such no doubt tend to carry out the tenets of streamlining, their efficacy is doubtful in view of the top of the tender being left open. It would be hard to imagine a more prolific source of eddy currents and swirls than the surface of a variable pile of coal.

It is stated that at speeds of 100 m.p.h. wind tunnel tests indicated a reduction of air resistance loss from 896 h.p. of the standard locomotive to 600 h.p. with the streamliner, a total of 296 h.p., approximately 10 per cent of the total power output. Now, if this is the case, it would hardly seem worth while, other than from the decorative standpoint. The average speed of this engine in service will probably be much less, and as the air resistance changes as an exponential function of the speed, the percentage saved will go down at a most disappointing rate. Also, such tests were made with a single car, and are almost useless when considered with a standard train.

In distinction, and at the chance of becoming even more unpopular, if such is possible, I suggest comparison with some of the latest foreign developments, all of which are the outgrowth of progressive evolution in contrast to optimistic rejuvenation. While lighter traffic conditions have obviated the huge concentrations of power demanded by American practice, English and Continental designers have for years given great care to detail, such as concealment of piping and the careful and logical grouping of accessories.

Noteworthy among such recent construction are the new 6400 class giants of the Canadian National, the four cylinder "Princess" Pacifics of the L.M.S., the even newer turbo locomotive of the same line, and the most business-like and effective compounds of the French State Railways, used on the Paris-Cherbourg boat trains.

From the standpoint of appearance alone, there is little to choose. In each case, component parts are admirably proportioned and fitted to their purpose, fussy detail eliminated in favor of careful grouping of all accessories, and while little conscious attempt has been made at streamlining, the result in each case is "a railroad man's idea of a clean cut locomotive."

DESMOND SPRAGUE.

New Book

The Interstate Commerce Commission, Part III—Volume B, by I. L. Sharfman, 833 pages, 9¼ in. by 6 in. Bound in Cloth. Published by the Commonwealth Fund, New York. Price $5.

This volume completes the third phase of Professor Sharfman's comprehensive study of the Interstate Commerce Commission. Of Part III's general subject—The Character of the Commission's Activities—it covers two aspects of rate regulation: The rate level, and the rate structure. Volume A of Part III, which was reviewed in the *Railway Age* of November 23, 1935, carries the same sub-title, considering such phases of it as the extent and diversity of the commission's tasks, the valuation project, and control of organization and finance.

After pointing out at the beginning of the present volume how "the regulation of railroad rates, although varying widely in scope and effectiveness at different times, has constituted from the outset the commission's central task and most prolific activity," the author proceeds to his discussion of the rate level, considering in turn the problem of rate reasonableness, the early emergence of guiding considerations, the disposition of the great advance rate cases, the execution of the rule of rate-making, the recapture of excess earnings and the control of rate divisions. All aspects of each of these subjects are exhaused in the same scholarly fashion and easy style which have distinguished the earlier volumes of this monumental work. Professor Sharfman then in like manner pursues his survey of the rate structure, discussing in that connection the problem of rate relationships, reparations for past maladjustments, personal discriminations and the principle of equality, guiding considerations in the control of rate relationships, adjustments of commodity relationships, adjustments of distance relationships and comprehensive rate readjustments.

In closing the author suggests that the government's experience in regulating railway rates "is not without significance" in connection with problems arising from the fact that the business depression has "directed popular thinking and governmental action toward a greater measure of authoritative interference in connection with the entire economic organization, with regulation of prices and production as the critical aspects of such extensions of public control." Observing that control of the latter sort "is decidedly more ambitious" and "might prove a more serious obstacle to sound performance" he concludes that "as a minimum, in any event, intimate knowledge of the experience of the Interstate Commerce Commission in railroad rate regulation should serve to prevent facile acceptance of theories of general price control and at least to suggest the magnitude and difficulty of the task that would be assumed."

The forthcoming final volume of this work—Part IV, subtitled The Commission's Organization and Procedure—may confidently be expected to round out an accomplishment which, as a reviewer of one of the earlier volumes observed, "must be the desire of every scholar"—to have written books that are "both authoritative and interesting."

NEWS

Courts Refuse Injunctions Against C. & D. Services

Operations inaugurated in the East under tariffs which became effective on November 16

The new collection and delivery tariffs of the eastern railroads, filed with the Interstate Commerce Commission on November 6 in accordance with the commission's order made public on October 30, went into effect on November 16 as proposed after two three-judge statutory courts in Washington and New York had denied on November 14 applications of the trucking interests for preliminary restraining orders to prevent the railroads from making their plan effective and to prevent the commission from accepting the tariffs. The refusal of the District of Columbia court was announced by Justice Wheat of the district court on a petition of the American Trucking Associations, Inc. He said the court would rule within ten days on the question of whether an interlocutory injunction would be granted. The New York court, denying the application of the Merchant Truckmen's Bureau of New York, said "the petitioner's right to a permanent injunction after a final hearing is much too doubtful to justify the granting of an interlocutory injunction."

New York railroads at the outset at least have negotiated pick-up and delivery contracts in that metropolitan area with but one or two truckmen. The New York, New Haven & Hartford has employed Stone's Express and the Warehouse Trucking Company; the Horstmann Trucking Corporation is doing the work for the New York Central; the Universal Cartage Company for the Lehigh Valley; the Railway Express Agency for the Baltimore & Ohio; the Sofield Transfer Company and the Genser Trucking Company for the Central of New Jersey; and Railway Motor Trucking, Inc., and Glanzberg Express & Trucking Corporation for the Delaware, Lackawanna & Western.

The Lackawanna has also employed the Railway Express Agency at New Jersey points on its line and is using one, two or three local truckers at its Pennsylvania and New York stations. The Reading and Central of New Jersey issued a joint statement in connection with the inauguration of the service, saying that together they were at all points utilizing "more than 6,200 trucks of 400 trucking companies." The Erie and the Pennsylvania have had storedoor services in effect on a restricted basis for some time.

The latter, in a statement issued on November 14, called the unrestricted tariffs "one of the most far-reaching accomplishments of the railroads in recent years in making their service more convenient and attractive." The P. R. R. plans to introduce "widespread improvements and refinements" and "will quicken many of its merchandise freight services throughout the system." The statement continued to point out that the volume of merchandise freight handled by the Pennsylvania in pick-up and delivery operation has been steadily increasing, even under the restricted tariffs heretofore in effect, when extra charges were made for truck pick-up and delivery where shipments moved more than 260 mi. by rail. P. R. R. traffic officers, it adds, "feel that the savings to be effected to patrons and the speed, convenience and dependability of freight movement under full railroad responsibility, will emphasize the attractions and advantages of the new service and constantly expand the volume of traffic handled."

Chicago, North Shore & Milwaukee Held Exempt from Railway Labor Act

Division 3 of the Interstate Commerce Commission has made a report finding that the Chicago, North Shore & Milwaukee, electric railroad, falls within the terms of the exemption proviso of the railway labor act which exempts street, interurban, or suburban electric railways unless they are operating as part of a general steam railroad system of transportation.

Barge Freight Handlers' Wages Increased

A decision handed down by an arbitration committee has increased wages of freight handlers employed by the Federal Barge Lines from 44 cents to 50 cents an hour, retroactive to September 26, when a 16-day strike was terminated. The decision affects 246 workers employed at the docks at the foot of North Market street, St. Louis, Mo., and in East St. Louis, Ill. They are members of the International Longshoremen's Association.

Annual Dinner of Railroad Division, A.S.M.E.

The Railroad Division of the American Society of Mechanical Engineers will hold its annual dinner and business meeting at the Midston House, Madison avenue and Thirty-eighth street, New York, on Tuesday, December 1, at 6:30 p.m. This follows the Railroad Session held on the afternoon of the same day during the annual meeting of the society, so that all those in attendance at the session may have an opportunity to join with the Executive Committee in the dinner meeting.

I. C. C. Grants Certificate to Pan-American Bus Lines

Rejects Rogers recommendation and permits continuation of New York-Miami service

Over the protests of the railroads and several other bus companies Division 5 of the Interstate Commerce Commission has issued a certificate of public convenience and necessity to the Pan-American Bus Lines authorizing the company to continue to operate as a common carrier for the transportation of passengers and their baggage between New York and Miami, Fla., subject to a restriction that no local service shall be performed between or intermediate to New York and Washington, D. C., or between Washington and Staunton, Va. This case represented one of the first applications for a certificate filed by a bus company and was made the subject of extensive hearings and a proposed report submitted last May by Director Rogers of the Bureau of Motor Carriers.

Director Rogers recommended denial of the application, on the ground that existing services and facilities between the points served were reasonably adequate, but the commissioners take the position that applicant's service "was, undoubtedly, a new and distinctive form of service, better adapted to long-distance through service than that which protestants had heretofore maintained."

The service was instituted on August 10, 1935, with one trip per week in each direction but has since been increased to three round trips a week. Passengers are transported in one vehicle from origin to destination and need only present their tickets once. No local traffic is handled and each seat is reserved. Baggage may be checked from origin to destination; passengers are given newspapers and magazines and the use of pillows without additional charge, and each vehicle carries a porter who assists the passengers and points out and explains to them places of scenic and historic interest along the route, which was selected with special reference to such points of interest.

The commissioners, in a 32-page report, said there was no evidence of record justifying the conclusion that applicant's service has been harmful to protestants, that competition, if kept within reasonable bounds, is not proscribed by the motor carrier act and may serve a useful public purpose, and that the motor bus industry is a new and developing industry and that applicant's operation will in any event serve a useful experimental purpose.

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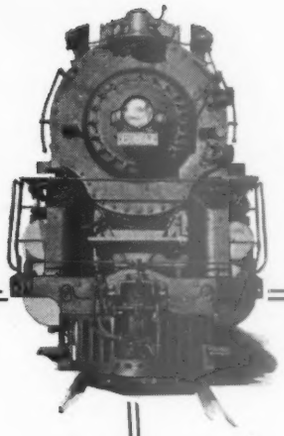
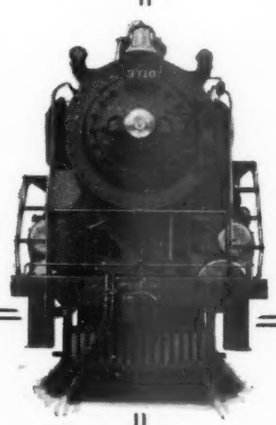


Locomotive Designs are CHANGING

Locomotives recently purchased and those being considered today provide higher horsepower capacity and higher speeds in line with present day operating conditions. » » » Lima's engineers will gladly consult with you and recommend designs that provide this higher capacity to meet modern requirements.



LIMA LOCOMOTIVE WORKS

LIMA LOCOMOTIVE WORKS INCORPORATED

INCORPORATED, LIMA, OHIO

P. W. A. Railroad Loans Net Profit to Government

Gain is already $3,218,247 from sale of portion of securities accepted as collateral

Public Works Administration loans, $200,529,000 to 32 railroads for rolling stock, motive power, modernization and improved plant, made possible work-producing construction and resulted in a profit of $3,218,247 to the Public Works Administration from the sale of a portion of the bonds and securities accepted by it to cover the loans, according to a special report made by the Accounting Division to Administrator Harold L. Ickes.

PWA's loans enabled the 32 railroads to construct and purchase three high-speed streamlined trains, 195 locomotives, 303 passenger cars, 36 mail and express cars which went to make up a number of other well-known high speed trains; and 24,170 freight cars. It also enabled the repair and reconditioning of 1,928 locomotives, 947 passenger cars, 40,877 freight cars, and the equipment of 300 freight cars with automatic loaders. Considerable reconstruction of roadbeds, bridges, culverts, and other structures also took place, including completion of the electrification of the Pennsylvania from New York to Washington.

The Accounting Division reported that if PWA had not been able to loan money to railroads, the carriers would have been in a less advantageous position to care fully for the increased passenger traffic which resulted when fares were decreased on June 1. Such trains as "The Flying Yankee" of the Boston & Maine, the Illinois Central's "Green Diamond," the New York, New Haven & Hartford's "Comet," the Gulf, Mobile & Northern's two "Rebels," the Chicago, Milwaukee, St. Paul & Pacific's two "Hiawathas," and the two trains of the Baltimore & Ohio, the "Royal Blue" and the "Abraham Lincoln," all resulted from PWA loans.

The Public Works Administration allotted a total of $201,029,500 to the 32 railroads. The railroads, however, actually borrowed $200,529,000 of that amount. Its disbursement spread to every state of the union except Arkansas, Florida, Nebraska, North Carolina, Rhode Island and South Carolina. The indirect labor on one railroad project spread through 37 states.

Subsequently the Reconstruction Finance Corporation arranged to take over $191,994,500 par value of these securities at a price to the RFC in the amount of $191,283,399, resulting in a book loss at the time of $711,100. Meanwhile, there had matured $84,000 worth of bonds. The total deliveries by PWA (sales and maturities) represent a total of $192,078,500. This left the par holdings of PWA at $8,451,000. RFC has sold, of the amount it bought, $91,741,000 par value of securities. However, the sales price has been $95,663,387, giving a profit of $3,929,347.

The largest of these loans was $70,165,000, made to the Pennsylvania. On this, all of which has been turned over to the Reconstruction Finance Corporation, sales to date have realized a profit of $3,396,999. These loans to the Pennsylvania financed the program which brought about completing electrification of its New York to Washington division, the construction of 7,000 new freight cars, 68 electric locomotives, and the purchasing of 33 electric locomotives and 98,787 tons of rails.

The railroad construction and improvement program created approximately 260 million man-hours of employment for rail and shop workers. It brought about considerable revival in many localities which were hard hit. It created nation-wide employment for hundreds of thousands of men in certain trades. Some of them were railroad employees called back to work in shops and on the right-of-way; others were called back by equipment manufacturers; still others went back to work in mines, quarries, mills and factories scattered all over the nation.

The PWA Division of Transportation Loans, organized in the fall of 1933, has been abolished by PWA. The personnel has been transferred to RFC.

Washington Railroad Enthusiasts to Meet

In order not to conflict with the national meeting in Boston on November 14 the Washington, D. C., division of the Railroad Enthusiasts, Inc., postponed its regular meeting until November 21. The speaker was to be J. R. Grove, master mechanic of the Washington Terminal.

R. & L. Historical Society

The November meeting of the New York Chapter, Railway & Locomotive Historical Society, held on Friday, November 13, at 7:30 p.m. in Room 1101 of the Engineering Societies building, 29 West 39th street, New York, was "Lehigh Valley Night." The speaker, Bertrand C. Bertram, special engineer, motive power department of the Lehigh Valley, delivered an illustrated address on "The Development of Motive Power on the Lehigh Valley."

Mergers Proposed by Greyhound Lines

Dissolution of a large number of separate companies in the Greyhound Lines system and their consolidation into eight of the principal companies of the system by December 31 is proposed in a series of applications for the necessary authority filed this week with the Interstate Commerce Commission. Applications have been filed covering 34 separate companies which it is proposed to merge into the Atlantic Greyhound Corporation, the Northland Greyhound Lines, Inc., the Southwestern Greyhound Lines, Inc., the Central Greyhound Lines, Inc., the Capitol Greyhound Line, the Pennsylvania Greyhound Lines, Inc., the Pacific Greyhound Corporation, and the Southeastern Greyhound Lines. The purpose is said to be the savings in taxes which would otherwise be required under the new revenue law and simplification of accounting and reporting. The applications have been set for hearing before Division 5 of the commission on November 27.

I. C. C. Finding Upheld in Industrial Allowance Case

Statutory court at Milwaukee in a recent decision refused to grant injunction

The Interstate Commerce Commission has been advised that on November 14 a statutory court at Milwaukee, refused to grant an interlocutory injunction sought by the A. O. Smith Corporation against the United States, and announced from the bench its decission in a similar case involving the Goodman Lumber Company. Decrees of dismissal were entered in both cases. The same court had previously granted an interlocutory injunction to the Goodman Lumber Company when that case was heard and submitted in May, 1936. These are two of numerous similar cases resulting from the commission's investigation in Ex Parte No. 104, Practices of Carriers Affecting Operating Revenues or Expenses, Part II, Terminal Services. The proceeding involves switching allowances paid by the carriers to industries, many of which are located in the Pittsburgh and Chicago districts and in Louisiana and Texas. The commission has ordered many of the allowances cancelled on the grounds that the switching within an industrial plant beyond a reasonable point of interchange is a plant service which it is not the duty of the carriers to perform on the basis of their line-haul rates, and for which they cannot lawfully assume the industry's costs. The court questioned plaintiff's counsel at considerable length regarding the contention that the action of the commission was revolutionary, and that the commission had no power to enter an order to cease and desist from paying any allowance to an industry. Having considered the full commission record and the briefs filed in the Goodman case, it announced that the decree must be for defendants and, inasmuch as there appeared to be no new question involving judicial determination of the A. O. Smith case, a decree would also be entered for the defendants in that case and no injunction would be granted to that company. Broadly speaking, the court indicated that a proper investigation had been instituted; that proper hearings had been had and an enforcible order entered; that the commission had exercised its statutory authority in handling a matter within its province; and that it would not substitute its judgment for that of the commission.

Special Board Finds Florida Ship Canal Justified

The controversy over the proposed Atlantic-Gulf ship canal across the state of Florida, for which Congress refused to vote an appropriation at its last session after work on it had been started with work-relief funds, is to be revived at a hearing before the Board of Engineers for Rivers and Harbors set for December 16 at Washington as the result of a "revisory" report submitted by a special board of engineers on November 1 expressing the view that the construction of a sea-level canal with a minimum depth of 33

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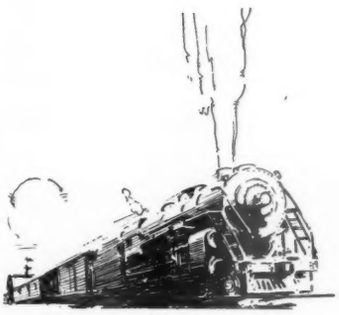
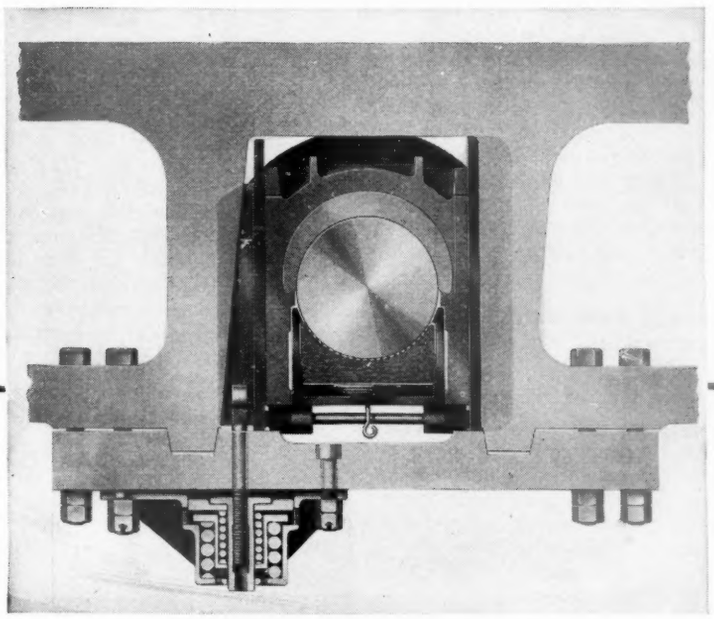
MAINTAINING DRIVING BOX ADJUSTMENT

. . . is a complicated problem





Holding driving boxes so they do not pound and do not stick, is impossible under the old methods.

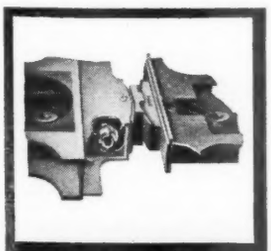
Regardless of box expansion due to temperature change freedom of vertical movement must be maintained.

Ample cushioned resistance to horizontal movement between the pedestal jaws must be provided to hold the box against pounding yet shield and cushion unusual shocks that otherwise might overstress parts and cause failure.

The Franklin Automatic Compensator and Snubber holds the box in adjustment at all times, by compensating for expansion and providing a yielding cushioned resistance to excessive blows.

It reduces maintenance, protects the track structure and vastly improves the riding quality of the locomotive. To the locomotive it is what the shock absorber is to your automobile.

Its twin, the Type E-2 Radial Buffer, prevents all slack between engine and tender and dampens oscillation between these units which further improves the riding qualities of the locomotive.



Franklin Type E-2 Radial Buffer dampens oscillation between engine and tender and makes for easier riding.

Because material and tolerances are just right for the job, genuine Franklin repair parts give maximum service life.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

feet and a minimum width of 250 feet at an estimated cost of $157,585,000, exclusive of lands, in addition to the $5,400,000 already expended, is justified in the public interest. At the hearing those interested will be given an opportunity to express opinions on this report and also the original report of a special board dated December 30, 1933. The Board of Engineers for Rivers and Harbors is expected to make a report to Congress.

R. R. Credit Corporation to Make Another Distribution

The Railroad Credit Corporation on November 30 will make its thirty-fifth liquidating distribution to participating carriers, amounting to $735,407, or one per cent of the contributed funds. Of this amount $380,055 will be paid in cash and $355,352 will be credited on carriers' indebtedness to the Corporation.

This will bring the total amount distributed to 67 per cent of the fund or $49,272,275. Of this total $23,995,103 will have been returned in cash and $25,277,172 in credits.

Alaska Railroad Authorized to Engage in Coastwise and Ocean Transport

Because of the interruptions to service caused by a strike of marine employees on the Pacific coast President Roosevelt on November 18 issued an executive order authorizing the government's Alaska Railroad to engage in coastwise and ocean transportation, making use of such vessels as may be made available to it by other government agencies or by charter to transport passengers and freight to and from its territory during the interruption of shipping.

Status of Grade Crossing Projects

Grade crossing projects estimated to cost $27,157,215 had been completed as of October 31 under the United States works program, according to the monthly report of the Bureau of Public Roads, while projects to the amount of $113,915,136 were under construction and others to the amount of $24,185,076 had been approved for construction. The projects completed included 510 grade crossings eliminated by separation or relocation, 64 grade crossing structures reconstructed, and 52 grade crossings protected by signals or otherwise. The projects under construction included 1,032 elimination projects.

I. C. C. Takes Motor Act Violations to Court

The Interstate Commerce Commission, acting through the section of law and enforcement of the Bureau of Motor Carriers, has taken steps to prosecute in court numerous instances that have been brought to its attention involving violations of the motor carrier act, particularly cases of operating without a permit or certificate or without having tariffs on file with the commission. The commission has authorized the filing of nine actions of this kind and several have already been instituted. The first suit brought by the commission to obtain compliance with the law was filed in the federal district court at San Francisco against the Benjamin Franklin Line, Inc., to restrain it from operating a bus service between San Francisco and Seattle after its application for a certificate was denied by the commission. Informations have also been filed in the federal court at Scranton, Pa., against the A. Blackmore Transfer Company, Inc., and the Eastern Carrier Corporation, alleging failure to observe published tariffs, and an injunction was issued by the federal court for the middle district of North Carolina restraining it from further nonobservance of tariffs and extending credit beyond the period allowed by the commission.

Wrenches that Slip

Car repairers, enginemen, track laborers, apprentices and even truckers in freight stations are the subject of frequent items in the accident records, where, because of a faulty wrench or unskillful habits in using wrenches, men have suffered injuries to their fingers, and other parts, and even have fallen off bridges, sustaining more serious injuries; and this part of the railroad accident record is the topic of Circular S-511, which has been issued by the Safety Section, A.A.R., for the use of Safety committees during the month of December. Five illustrative accidents are described and seven points for self-education are laid before the reader.

Railway Enthusiasts

Dana P. Goodwin of Fitchburg, Mass., was elected president of the Railroad Enthusiasts, Inc., at the annual meeting held on November 14 in Back Bay Station, Boston, Mass. Other officers elected are: National vice-presidents, Bruce C. Fales of Washington, D. C.; John W. Merrill of Boston and Franklin Snow of New York; national secretary, A. E. Harris of Leominster, Mass.; national treasurer, William Monypeny, Cambridge, Mass. At the meeting, which was attended by the delegates from the Boston, Vermont, New York and Washington divisions, plans for expansion were discussed and reports read, "showing a substantial growth in this national organization of railroad 'fans.'"

Income Derived from Transport

Approximately 10 per cent of all income in the United States received by individuals from private industries and occupations is provided by the transportation industry, according to the National Industrial Conference Board. Of this realized income from transportation approximately three-quarters is in the form of salaries and wages as compared with the two-thirds of total income accounted for by salaries and wages of all industries. Also, "chiefly because of the heavy bonded indebtedness of steam railroads," interest payments represent the second largest type of realized income in the transportation industry.

This industry, which includes the steam railroads, motor carriers, electric railways, water transportation companies, railway express companies, air services and pipeline companies, is found by the Conference Board to be the fifth largest industrial source of the national income. It is exceeded in this respect by manufacturing, trade, agriculture and the service industries. Realized income from transportation amounted to $6.5 billion in 1929, but declined to $3.7 billion in 1933, the statement adds. Preliminary estimates indicate a recovery to $4.3 billion in 1935. Over half the total income from transportation is provided by the steam railroads which contributed $3.9 billion in 1929 and an estimated $2.2 billion in 1935.

Club Meetings

The New England Railroad Club will hold its next meeting at Hotel Touraine, Boston, on Tuesday evening, December 8. C. B. Smith, engineer of tests of the Boston & Maine, will speak on hot boxes.

The Western Railway Club will hold its next meeting at the Sherman Hotel, Chicago, on Saturday evening, December 12. This will be annual Ladies' Night.

The Canadian Railway Club will hold its next meeting at Windsor Hall, Windsor Hotel, Montreal, on Monday evening, December 14. The speaker will be Sir Edward Beatty, chairman of the Canadian Pacific.

The Railway Club of Pittsburgh (Pa.) at its meeting on November 19 will be addressed by U. K. Hall, general purchasing agent of the Union Pacific, on Cooperation Between Railroad Purchasing and Stores Departments and Industry. The meeting is to be at the Fort Pitt Hotel.

The Car Foremen's Association of Chicago will hold its next meeting at the La Salle Hotel, Chicago, on Monday evening, December 14. C. J. Hayes, supervisor of A. A. R. billings, N. Y. C., will speak on handling of car repair bills.

Long Island Fares Again in Litigation

Passenger fares of the Long Island were involved in litigation again this week as a result of a court order obtained by the New York Transit Commission, having regulatory jurisdiction in New York City, requiring the road to show cause on Thursday why it should not be cited in contempt for the alleged violation of a previous order issued by the Supreme Court of Kings County. The present controversy involves the right of the Long Island, with respect to New York City traffic, to take advantage of those provisions of the Interstate Commerce Commission's passenger fare order which allowed the railroads to fix a minimum fare of ten cents and adjust fares upward to amounts ending in five or zero.

When the Interstate Commerce Commission's passenger fare order became effective on June 1 the Long Island attempted to maintain its intrastate coach fares on a three-cents-per-mile basis. The Transit Commission thereupon applied to the courts for an injunction under Section 57a of the New York railroad law, which prohibits a railroad operating in New York City and owned by another road from charging a higher rate for passenger service within that city than the parent railroad charges outside. The Pennsylvania's two-cents-per-mile coach rate brought the Long Island within the provisions of this law, and the courts, upholding the constitutionality of this statute, required the Long Island to comply with its provisions. The present action of the Transit Commission cites various instances wherein it is alleged that the ten-cent min-

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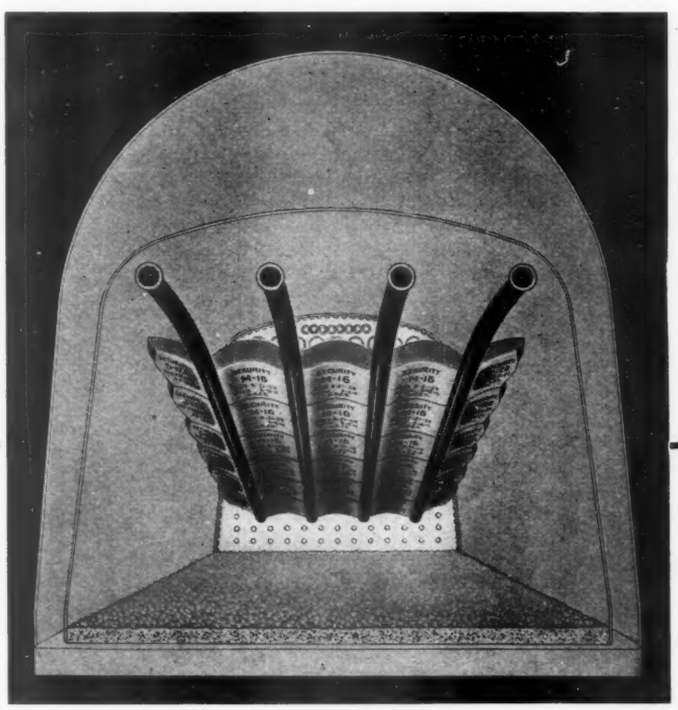
A CORRECT BRICK ARCH GUARANTEES FULL FUEL ECONOMY

There is a carefully worked out design of the Security Brick Arch for every class of locomotive. « « « This design guarantees maximum efficiency both as to fuel economy and hauling capacity. « « « In modernizing existing power and in maintaining locomotives in active service, be sure the correct brick arch design is installed and be sure it is completely maintained.



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HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

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Locomotive Combustion Specialists » » »

imum and the fixing of fares on the zero-or-five basis creates situations wherein the rate is more than two cents per mile. The city regulatory body contends further that the Long Island is entirely within the scope of Section 57a of the New York railroad law and is thus not entitled to make these minor departures from the two-cent rate which were authorized by the I.C.C.

Commenting upon the Transit Commission's action Louis J. Carruthers, general counsel for the Long Island, made the following statement: "The Transit Commission began a proceeding in the Spring of this year to compel the Long Island Railroad to reduce its rate between stations in New York City so that it would not exceed the rates charged by the Pennsylvania Railroad Company to stations in New Jersey. Mr. Justice Furman's order to that effect was subsequently affirmed by the Court of Appeals.

"Thereupon the Long Island filed tariffs with the commission, effective at once, which tariffs, in its opinion, strictly complied with the requirements of the order. Under these tariffs the fares charged by the Long Island within the city are on exactly the same basis as those charged by the Pennsylvania Railroad and authorized by the Interstate Commerce Commission. The motion now made by the commission calls upon the court to arbitrate certain minor differences between the commission and the Long Island with respect to the tariffs in question."

Canadian Wage Case Chairman Named

Justice A. K. MacLean, president of the Exchequer Court of Canada, has been appointed chairman of the board of conciliation on railway wages, the Department of Labor announced at Ottawa.

The board's duty is to inquire into the dispute between the Canadian railways and their employees in 17 trade unions, in which the organizations are attempting to have restored the 10 per cent deduction from wages made during the depression.

Justice MacLean was appointed by Hon. Norman Rogers, Minister of Labor, following the failure of the other two members of the board, chosen by the two parties to the dispute, to agree on a third member and chairman. The other members are W. Sanford Evans, of Winnipeg, nominated by the railways, and Fred Bancroft, of Oakville, Ont., nominated by the employees.

N.Y.C. and P.R.R. Planning for "Snow Trains"

"Snow trains" operated last year by the New York Central were so successful that J. W. Switzer, general passenger agent of the railroad, announced on November 16 an enlarged program for the coming winter season. In addition to the points covered last year, several new ski and winter sports resorts will be added, and the railroad expects to haul many more than the 33,000 passengers it carried on its snow trains last season. Special snow trains will be operated to North Creek, N. Y., Ticonderoga and Old Forge in the Adirondacks; Phoenicia and Woodstock in the Catskills; North Adams, Mass., in the Berkshires; Bear Mountain, N. Y., on the Hudson and to Manchester, Vt. Snow conditions permitting, the first train will be operated January 3, to Bear Mountain. Beginning Friday, January 8, week-end trips will be operated to one Adirondack point and to the Catskills.

The Pennsylvania has established a "Winter Sports Bureau" in its city ticket office at 1417 Chestnut street, Philadelphia. That road will this year run through snow trains consisting of dining cars, baggage coaches for the checking of equipment, and equipment cars, over week-ends to the outstanding winter sports centers. In this connection the new Winter Sports Bureau will function as a clearing house for all phases of snow train activities, augmenting the regular railroad personnel with specialized information.

States Had Nearly Billion for Highway Uses Last Year

State highway departments received $902,010,000 for highway purposes in 1935, according to reports of state officials to the Bureau of Public Roads of the U. S. Department of Agriculture. Allocations from payments by highway users in registration fees, gasoline taxes, motor-carrier taxes and tolls on state-operated bridges and ferries produced $589,818,000 or 98 per cent of the income from state revenue sources. Federal funds received amounted to $219,381,000; $20,366,000 was derived from counties and other local sources; $55,883,000 from sales of bonds and notes; and $16,562,000 was appropriated from general funds or derived from miscellaneous sources.

State highway department expenditures amounted to $848,355,000, of which $416,412,000 was for construction and $184,458,000 was for maintenance. Other expenditures for equipment, administration, state police and interest on highway debt brought the total expenditure for state-administered highways to $713,066,000. Retirements of bonds amounted to $55,756,000 and $79,533,000 was transferred for use on local and park roads or was used for non-highway purposes.

Motor vehicle users paid special state taxes amounting to $950,971,000 in 1935 according to reports of state officials to the Bureau of Public Roads. Of this amount $761,533,000 was allocated for highway purposes and constituted by far the largest source of highway revenue. State highways received $522,130,000, local roads and streets were allotted $238.134,000 and $1,269,000 went for miscellaneous highway purposes. Collection and administration costs amounted to $31,761,000. The taxes reported are: On motor-vehicle registration, $318,748,000; state taxes on gasoline, $619,802,000; and state motor-carrier taxes, $12,421,000. Other taxes paid on motor vehicles and garages as property and on the businesses of motor carriers are not included.

A total of $147,142,000 was diverted to non-highway purposes, $86 658,000 going to general funds, $16,925,000 for relief, $30,773,000 for education and the remainder was allocated for miscellaneous purposes. Approximately $10,000,000 of the total collections was undistributed at the end of the year.

Equipment and Supplies

LOCOMOTIVES

THE WESTERN MARYLAND is inquiring for 10 locomotives of the 2-6-6-4 type.

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for five passenger locomotives of the 4-6-4 type.

THE CHICAGO, BURLINGTON & QUINCY will construct 11 locomotives at its West Burlington shops, to cost more than $1,000,000. Of these, 10 will be for either freight or passenger service, and one will be a streamlined steam locomotive.

FREIGHT CARS

THE VIRGINIAN is inquiring for 25 automobile box cars of 50 tons' capacity.

THE UNION RAILROAD COMPANY is inquiring for 900 mill type gondola cars of 70-tons' capacity.

THE DULUTH, MISSABE & NORTHERN is inquiring for 250, 500 or 1,000 steel ore cars of 75 tons' capacity and 50 steel hopper cars of 75 tons' capacity.

THE BESSEMER & LAKE ERIE is inquiring for 2000 freight cars, including 1000 hopper cars of 90-tons' capacity, 500 hopper cars of 70-tons' capacity, and 500 mill type gondola cars of 50-tons' capacity.

THE CHESAPEAKE & OHIO is inquiring for 2,000 freight cars to include 1,000 hopper, 500 box and 500 high side gondola cars, all of 50 tons' capacity. This company is also considering the question of purchasing 50 stock cars of 50 tons' capacity, 25 dry bulk cars of 70 tons' capacity and 50 caboose cars.

PASSENGER CARS

THE BOARD OF TRANSPORTATION, CITY OF NEW YORK, will receive bids until 1 p.m. on December 11, in room 609, at 250 Hudson street, New York City, for from 110 to 250 passenger cars for subway service.

IRON AND STEEL

THE NEW YORK CENTRAL will receive bids until November 25, for its 1937 requirements of rail.

THE UNION PACIFIC has ordered 20,000 tons of rails from the Colorado Fuel & Iron Company, the Inland Steel Company and the Carnegie-Illinois Steel Company.

THE NEW YORK CENTRAL has received bids for about 250 tons of steel, for use in connection with grade crossing improvement work at North Weedsport, N. Y.

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Economical Factory Service for Superheater Owners

THE Elesco service will factory-rebuild your unserviceable superheater units to a condition like new, both internally and externally . . . using the same skilled men and special machines as used in their original manufacture. The price of remanufactured units is much less than the cost of new units and factory standards of quality are assured.

Elesco factory remanufactured superheater units have helped many railroads to keep their locomotives in first class operating condition . . . and have eliminated expensive engine failures due to patched superheater units. Use this service on your road . . . it is both economical and dependable.

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Supply Trade

Louis Kuehn, president, and **A. J. Luedke,** secretary and treasurer, of the **Milcor Steel Company,** a subsidiary of the **Inland Steel Company,** have been elected directors of the latter company.

Albert E. Hill, service engineer of **Standard Equipments, Inc.,** with headquarters in New York, has been appointed western manager in charge of sales and engineering, with headquarters at Chicago.

Frederick Salditt has been appointed vice-president of the **Harnischfeger Corporation,** Milwaukee, Wis. In addition to his duties as vice-president, Mr. Salditt will continue to retain supervision of foreign operations.

L. E. Carlson has been appointed district engineer for the southeastern district of the **Westinghouse Air Brake Company** with headquarters at Washington, D. C. Mr. Carlson was graduated from the University of Washington, Seattle, Wash., in the class of 1926, in mechanical engineering, after which he became an apprentice at the Wilmerding plant, and subsequently served in various capacities in the engineering department as a test division engineer.

George B. Cushing, who in 1931 organized a technical promotion group now known as the engineering service department of the **A. M. Byers Company,** Pittsburgh, Pa., has been appointed manager of sales promotion. Mr. Cushing joined the A. M. Byers Company in 1928 to organize and head its present advertising department. **B. D. Landes,** who has been in the technical group since its inception, has been appointed manager of the engineering service department. **T. C. Winans,** in the advertising department since 1930, has been appointed advertising manager. Both the manager of the engineering service department and the advertising manager become a part of the newly formed sales promotion group headed by Mr. Cushing. **R. H. Gardner,** formerly of the Washington, D. C., office of the company, has been appointed manager of pipe sales and will take over all sales management duties in connection with wrought iron and steel tubular products.

OBITUARY

Roy E. Cartzdafner, chief engineer and purchasing agent of the Magor Car Corporation, died suddenly on November 12, at his home in Passaic, N. J. Mr. Cartzdafner was born at Somerville, Ohio, in 1883 and was graduated from the Ohio State University. He was connected with the Kilbourne & Jacobs Manufacturing Company until 1916, when he entered the service of the Magor Car Corporation as chief engineer and later was appointed also purchasing agent, which positions he held at the time of his death.

Construction

CALIFORNIA & OREGON COAST.—Examiner W. J. Schutrumpf of the Interstate Commerce Commission has recommended in a proposed report that the commission deny an application filed by the city of Grant's Pass, Ore., and the Crescent City, Calif., Harbor District for a certificate authorizing construction of an extension of this company's line from Crescent City, Calif., to Waters Creek, Ore., 81 miles. He also recommended dismissal of the application of the city of Grant's Pass for authority to acquire the properties of the California & Oregon Coast. Applications had been made for a grant and loan for construction to the W.P.A. and the R.F.C.

CANADIAN NATIONAL.—A contract has been awarded to the Fred Mannix Construction Company, Calgary, Alta., for the construction of 100.5 miles of single-track railway in Quebec. This line, which was described briefly in the October 10 issue of the *Railway Age*, will extend from Senneterre, Que., on the "Transcontinental" line of the Canadian National, southwesterly 100.5 miles to Rouyn, Que., where it will connect with the Nipissing Central and also with a branch line of the C. N. R. extending south from a connection with the main line at Taschereau, which is 72 miles west of Senneterre. The line will serve a rich mining district which is now in the development stage, although a number of important mines are now under production. The contractor will clear the right of way, do the grading, install all culverts and trestles, and construct the substructures for the main bridges. Track-laying work and ballasting will be done by the railroad with its own forces.

CHICAGO & NORTH WESTERN.—Bids are now being requested for work in connection with the construction of a highway subway to carry Chase avenue, Milwaukee, Wis., under the tracks of this road. This structure, which will consist of steel spans on concrete abutments, will cost approximately $500,000. Bids for grading necessitated by track changes incidental to this project are being asked by the railroad, while the state highway commission is requesting bids for the construction of the substructure and certain other portions of the work.

DELAWARE, LACKAWANNA & WESTERN.—A contract has been given to the Potter-Dewitt Corporation, Pavilion, N. Y., for the elimination of a grade crossing at Linwood, N. Y., and a contract has been given to Holleran Brothers, Elmira, N. Y., for the construction of drainage sewers at Elmira.

NEW YORK CENTRAL.—A contract has been awarded to the Minton Construction Company, Cleveland, Ohio, for work at Ashtabula, Ohio, incident to the providing of a modern scrap and reclamation plant at that point. The cost of this work, which will involve alterations in existing buildings and the construction of a number of small buildings, will aggregate approximately $40,000.

Financial

BOSTON & MAINE.—*Abandonment.*—The Interstate Commerce Commission has authorized the abandonment of this company's Ashburnham (Mass.)-South Ashburnham branch, 2.6 miles.

CARLTON & COAST.—*R.F.C. Loan.*—The Interstate Commerce Commission has denied an extension of time of payment of a loan to this company of $535,800 by the Reconstruction Finance Corporation, which matured June 12.

CHESAPEAKE & OHIO.—*Extra Dividend.*—Directors have declared $1 in cash and $2 in new preference stock in extra dividends on the common stock of this company, in addition to the regular quarterly dividend of 70 cents.

CHICAGO & NORTH WESTERN.—*Abandonment.*—The trustee has applied to the Interstate Commerce Commission for authority to abandon a branch line from Burdette, Minn., to Breen's Spur, 4.87 miles.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—*Extra Dividend.*—Directors of this company have declared an extra dividend of $23 a share on the common stock, in addition to the regular semi-annual $5.

GULF, MOBILE & NORTHERN.—*Acquisition.*—Division 5 of the Interstate Commerce Commission has approved the purchase by the Gulf Transport Company of the property and operating rights of Joe M. Davis, doing business as the Davis Transportation Company, operating bus service in Mississippi.

Equipment Trust Certificates. — This company has applied to the Interstate Commerce Commission for authority for an issue of $1,440,000 of 2¼ per cent equipment trust certificates, $698,000 to be exchanged for outstanding 4 per cent certificates and $742,000 to be used in acquiring new equipment. It is proposed to sell the certificates to Brown, Harriman & Co., at 100.17.

KANSAS CITY SOUTHERN.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to guarantee an issue of $3,195,000 of 3 per cent equipment trust certificates.

LEHIGH VALLEY.—*Bonds.*—The Interstate Commerce Commission has authorized this company to pledge up to $11,400,000 of its general consolidated mortgage 5 per cent bonds as security for a $4,000,000 loan from the Equitable Trust Company.

LOUISIANA & ARKANSAS.—*Trackage Rights.*—Division 4 of the Interstate Commerce Commission has issued an order authorizing this company to operate under trackage rights over the Ferriday branch of the Texas & Pacific from Torras, La., to Lobdell, 48 miles, and thence over tracks on approaches and a bridge to be built by the state of Louisiana across the Miss-

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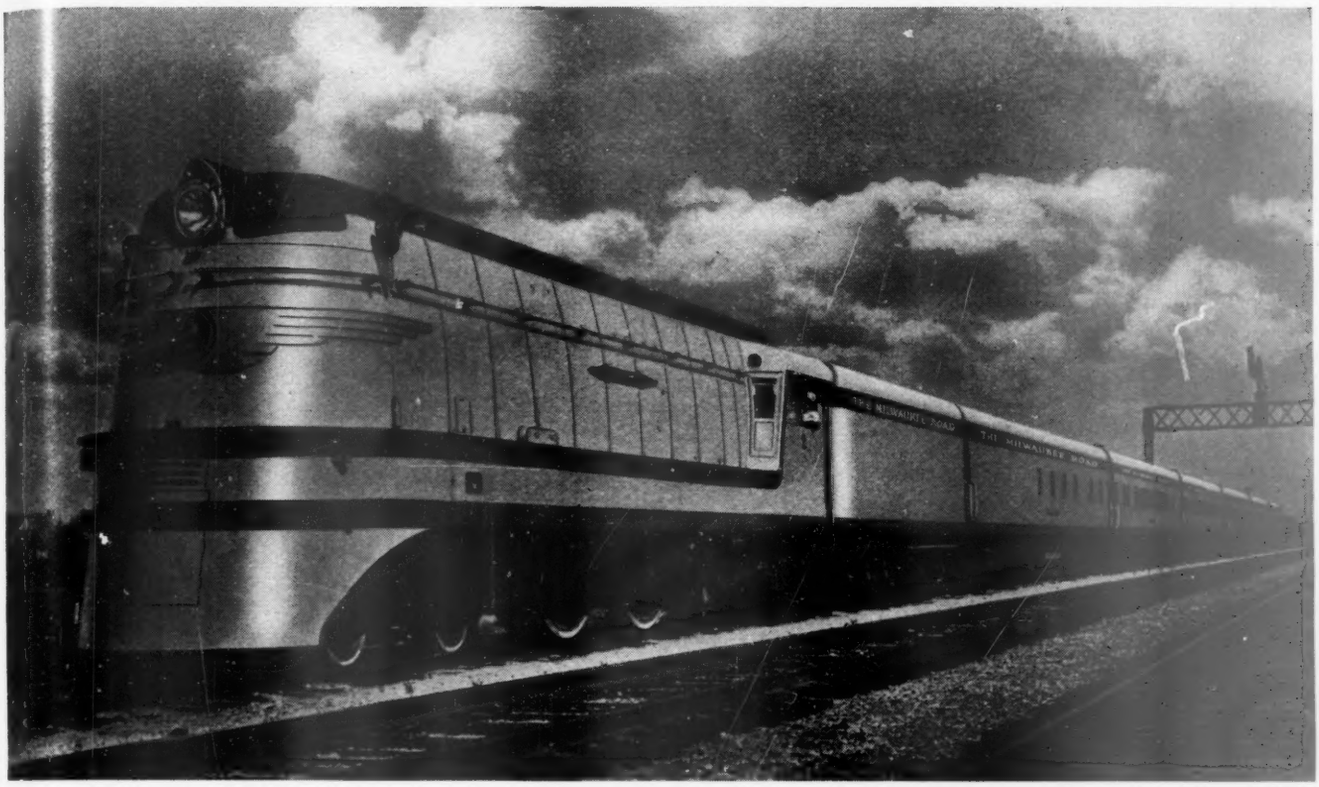


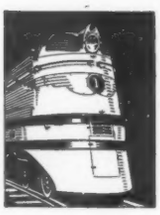
WAS THE INVESTMENT WORTH WHILE?

In the sixteen months they have been in operation the present "Hiawathas" have carried 350,000 paying passengers.

They earned approximately $750,000 net, after interest and depreciation, in the first year of their operation which ended May 31.

In June and July of this year net profit exceeded $160,000, or $40,000 more than in the corresponding two months of 1935.

Alco



AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET, NEW YORK CITY

issippi river near Baton Rouge; also to abandon approximately 9 miles of its own line and a car ferry between Filston and Angola, La.

ILLINOIS CENTRAL.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and the Omaha Bridge & Terminal to abandon 0.7 mile of the line of the latter company near Omaha, Nebr.

NEW YORK CENTRAL.—*Bonds.*—The Interstate Commerce Commission has authorized the Boston & Albany to issue and the New York Central to guarantee $500,000 of 4¼ per cent improvement bonds of 1928, to be sold to Whiting, Weeks & Knowles, Inc., at a commission of 1 per cent.

NEW YORK, CHICAGO & ST. LOUIS.—*Equipment Trust Certificates.*—The Reconstruction Finance Corporation, which had offered $4,624,000 of this company's 4 per cent equipment trust certificates for competitive bidding, has sold them to Stroud & Co., of Philadelphia, Pa., and associates, at 104 and accrued interest.

PENNSYLVANIA.—*Dividend.* — Directors of this company have declared a dividend of $1 per share on its ($50 par) stock payable next month to holders of record November 23. This is the second distribution of this amount this year.

PERE MARQUETTE.—*Back Dividend.*—Directors have declared a $20 dividend against the accumulated arrearages on this company's 5 per cent prior preference stock.

PENNSYLVANIA. — *Acquisition.* — Division 5 of the Interstate Commerce Commission has issued an order staying the effect of the proposed report by Grover L. Swink, of its Bureau of Motor Carriers, dated October 7, recommending denial of the application of the Pennsylvania Transfer Company of Pittsburgh, whose name was changed later to Pennsylvania Truck Lines, Inc., for authority to acquire control of the Alko Express Lines, and the case has been set for argument on December 18.

SOUTHERN PACIFIC.—*Equipment Trust.* —The Interstate Commerce Commission has authorized this company to assume liability for $9,150,000 of series N 2¼ per cent equipment trust certificates, maturing 1937-51, to be sold to Halsey, Stuart & Co. at 99.527, making the interest cost approximately 2.3 per cent.

WESTERN MARYLAND. — *Dividend.* — Directors have declared an initial dividend of $7 per share on its cumulative first preferred stock, covering the accumulation for the year ended June 30, 1919.

WHEELING & LAKE ERIE.—*Equipment Trust.*—This company has awarded an issue of $750,000 equipment trust 2¼ per cent five-year certificates to the Northern Trust Company, whose bid was 103.41.

Average Prices of Stocks and of Bonds

	Nov. 17	Last week	Last year
Average price of 20 representative railway stocks..	57.83	58.99	39.34
Average price of 20 representative railway bonds..	83.68	83.99	73.00

Dividends Declared

Bangor & Aroostook.—62c, quarterly; Preferred, $1.75, quarterly, both payable January 1 to holders of record November 25.

Chesapeake & Ohio.—Extra, $1.00, payable December 15 to holders of record December 2. $2.00 Extra, payable in new preferred Series A stock; 70c, quarterly, both payable January 11 to holders of record December 15.

Cincinnati, New Orleans & Texas Pacific.—Preferred, $1.25, payable December 1 to holders of record November 17.

Cincinnati, New Orleans & Texas Pacific.—Extra, $23.00; $5.00, semi-annually, both payable December 26 to holders of record December 4.

Kansas City Southern.—Preferred (resumed), $1,00, payable December 3 to holders of record November 21.

Northern Railroad Company of New Jersey.—4 Per Cent Guaranteed, $1,00, quarterly, payable December 1 to holders of record November 20.

Pennsylvania.—$1.00, payable December 21 to holders of record November 23.

Pere Marquette, Prior Preference, $20.00, accumulated, payable December 17 to holders of record November 28.

Western Maryland.—7 Per Cent First Preferred, $7.00, payable December 15 to holders of record December 1.

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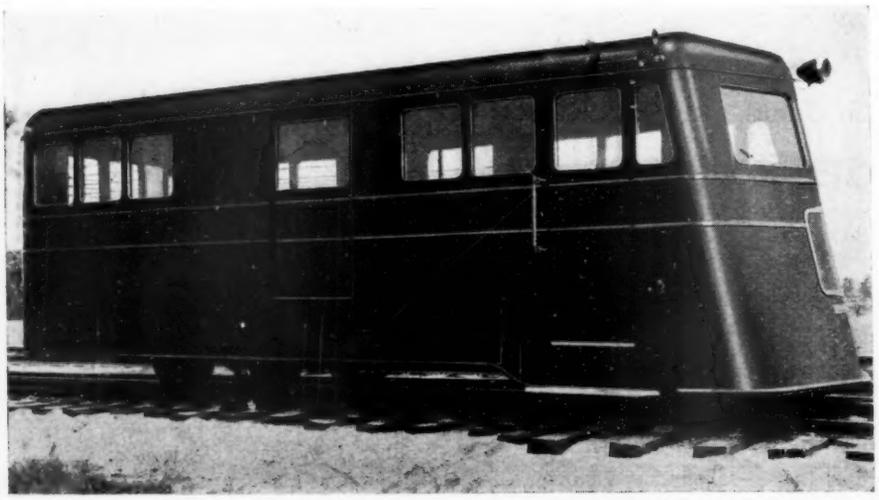

The Railcarbus, Built by the Kalamazoo Railway Supply Company, Kalamazoo, Mich., Seats 17 and Carries Baggage, Express and Mail—Horsepower, 85; Maximum Speed, 60 M.P.H., Total Weight, 13,600 Lb.

Railway Officers

FINANCIAL, LEGAL AND ACCOUNTING

C. T. Adamson, chief clerk to the auditor of revenue of the Chicago, Indianapolis & Louisville at Chicago, has been promoted to auditor of revenue, with the same headquarters, to succeed **W. B. Patterson,** deceased.

S. L. Porter, assistant general auditor of the Chicago, Burlington & Quincy, whose promotion to general auditor, with headquarters as before at Chicago, was reported in the *Railway Age* for November 7, has been in the service of this company for 37 years. He was born at Erie, Ill., and entered the service of the Burlington on May 1, 1899, in the freight office at Chicago, where he remained about 10 years. At the end of this period he was transferred to the office of the auditor of freight accounts as assistant chief clerk and subsequently he was appointed chief clerk to the ticket auditor. Next he became chief clerk to the general auditor, then being promoted to assistant auditor of expenditures and thence to auditor of expenditures. Subsequently, Mr. Porter was made auditor of freight accounts and on June 1, 1927, he was further advanced to assistant general auditor, the position he was holding at the time of his recent promotion to general auditor, which was effective on November 1.

Moffett

S. L. Porter

A. W. Lavidge, auditor of freight accounts of the Chicago, Burlington & Quincy, who has been promoted to assistant general auditor, as reported in the *Railway Age* of November 7, has been in the service of this company for 31 years. Mr. Lavidge was born on January 14, 1888, at Omaha, Neb., and after a high school education he entered railway service with the Burlington in 1905, as a clerk in the locomotive statistics department of the auditor's office at Omaha. Later he was made head of this department and on February 19, 1908, he was

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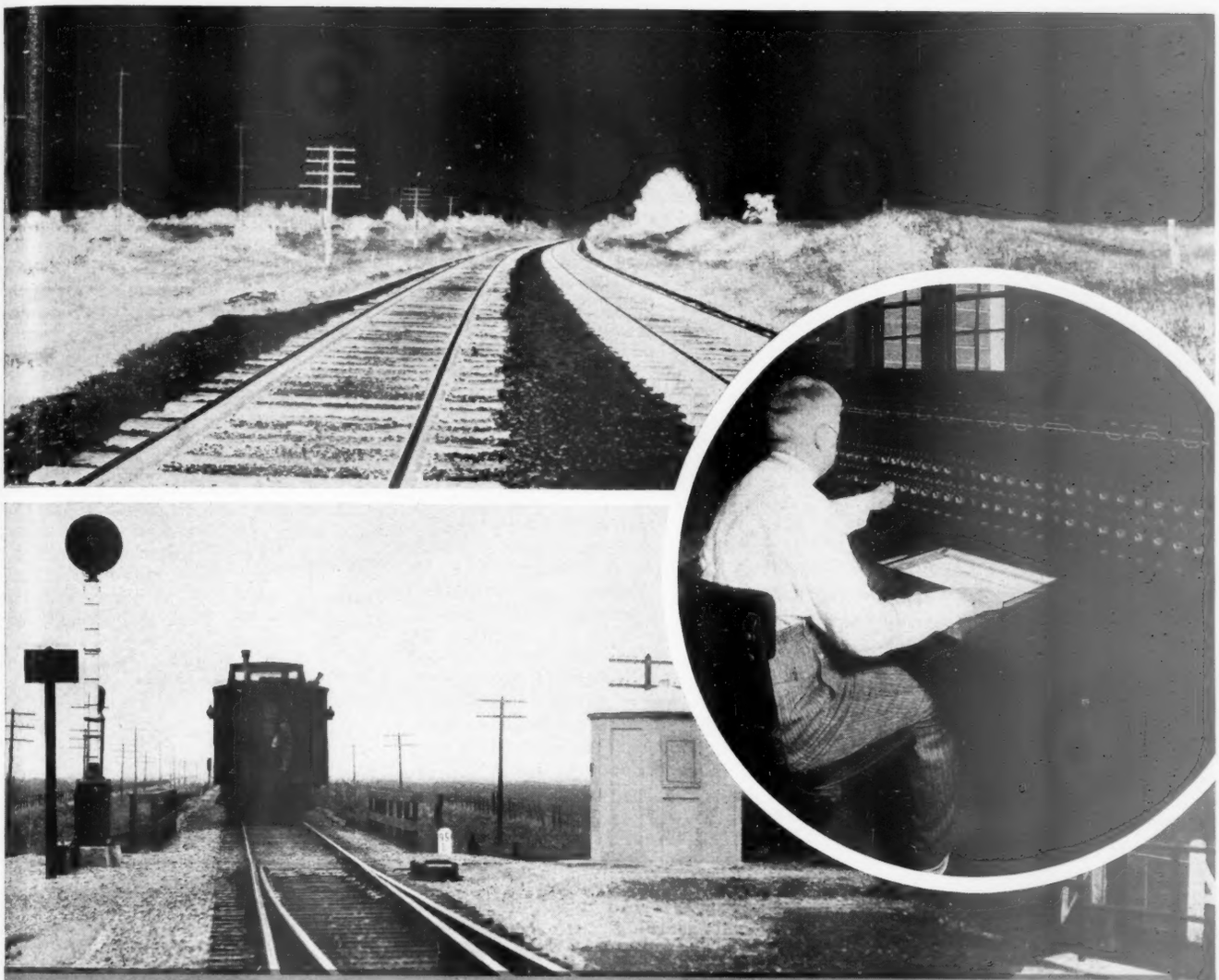

Change the NEGATIVE outlook to

POSITIVE Performance

Where present multiple track capacity exceeds the traffic requirements, the economical step is to revert to single track operation with "Union" Centralized Traffic Control. A volume of traffic as great as that handled ordinarily on double track under train order operation, can be handled on single track with "Union" C.T.C. Maintenance and operating costs will be reduced while operating efficiency will be increased. Write our nearest office for additional information.

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SWISSVALE, PA.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

made assistant head of the materials department in the same office, being appointed head of this department on December 1, 1908. On March 1, 1913, when the auditor's office of Lines West was

A. W. Lavidge

transferred to Chicago, Mr. Lavidge was assigned to the office of the auditor of expenditures at Chicago. On July 5, 1913, he was advanced to chief clerk to the general auditor and on April 1, 1915, he was appointed chief clerk to the auditor of expenditures. Following about 10 months in military service Mr. Lavidge returned to the Burlington on February 10, 1919, as chief clerk to the comptroller, being appointed assistant auditor of expenditures on March 1, 1920. On January 1, 1924, he was promoted to auditor of expenditures and on January 1, 1936, he was made auditor of freight accounts, the position he was holding at the time of his recent appointment as assistant general auditor, which was affective on November 1.

OPERATING

P. T. McCarthy has been appointed assistant superintendent of the Oregon division of the Union Pacific, with headquarters at Portland, Ore., to succeed **J. F. Corbett,** retired.

J. J. Gallagher, district engineer on the Missouri-Kansas-Texas of Texas, with headquarters at Denison, Tex., effective October 15 was promoted to division superintendent, with the same headquarters, to succeed **E. E. Hanna,** who has resigned because of ill health.

George J. Fox, superintendent on the Alberta district of the Canadian Pacific, with headquarters at Medicine Hat, Alta., has been transferred to Calgary, Alta., to succeed **J. I. MacKay,** who has been transferred to Edmonton, Alta., where he replaces **J. L. Palethorpe,** who goes to Medicine Hat, to succeed Mr. Fox.

L. W. Shultz, acting assistant trainmaster of the Philadelphia division of the Pennsylvania, has been appointed assistant trainmaster of the Williamsport division, with headquarters at Northumberland, Pa. **W. H. Mapp,** acting assistant trainmaster of the Williamsport division, has been appointed assistant trainmaster of the Philadelphia division. **C. S. Searles** has been appointed assistant trainmaster of the Delmarva division.

A. C. Showalter, general superintendent of the New York, Chicago & St. Louis, who has been appointed assistant general manager, with headquarters as before at Cleveland, Ohio, as reported in the *Railway Age* of October 31, was born on November 15, 1873, at Akron, Ohio. He first entered railway service in 1889, serving in various capacities and as a sailor on the Great Lakes until 1915, when he was appointed an assistant superintendent on the New York, Chicago & St. Louis. Two years later he was advanced to superintendent, holding this position until 1925, when he was advanced to general superintendent, with headquarters at Cleveland.

Arthur D. Peters, superintendent of the Ft. Wayne and Chicago division of the New York, Chicago & St. Louis, who has been promoted to general superintendent, with headquarters at Cleveland, Ohio, as reported in the *Railway Age* of October 31, has been in railroad service for 31 years. He was born on November 19, 1879, at Springport, Mich., and received his higher education at Michigan State college, graduating with a master of science degree in civil engineering in 1903. During the following two years Mr. Peters served as an instructor in mathematics at Michigan State college, then entering the service of the Lake Shore & Michigan Southern (now part of the New York Central), as an engineer. In 1909 he was appointed assistant land agent with the same company, and two years later he became land agent for the Lake Erie & Western (now part of the Nickel Plate), being appointed a special engineer on this road in 1913. Three years later he was advanced to division superintendent, the position he was holding at the time of his recent appointment as general superintendent at Cleveland.

C. P. Fisher, trainmaster on the Pennsylvania at Chicago, whose promotion to superintendent of the Chicago Terminal division was reported in the *Railway Age*

Root

C. P. Fisher

for November 7, has been identified with the Pennsylvania for nearly 31 years. He entered the service of this company as a laborer in the maintenance of equipment department at Buffalo, N. Y., on January 3, 1906, later serving successively as a car repairman, yard brakeman, yard conductor and assistant yardmaster on the Buffalo division. On August 1, 1927, he was promoted to general yardmaster on Conemaugh division, holding this position until December 12 of the same year, when he was further advanced to assistant freight trainmaster at New York. On October 1, 1929, Mr. Fisher was appointed trainmaster of the Indianapolis division, being transferred to Chicago on February 16, 1933. His promotion to superintendent of the Chicago Terminal division became effective on November 1.

N. B. Walton, general superintendent of transportation of the Western region of the Canadian National, with headquarters at Winnipeg, Man., has been appointed chief of transportation, with headquarters at Montreal, Que. Mr. Walton was born in London, Ont., and entered railroad service in 1900 as clerk and stenographer with the Grand Trunk at Toronto. From that year until 1907 he served with the Grand Trunk as clerk and stenographer,

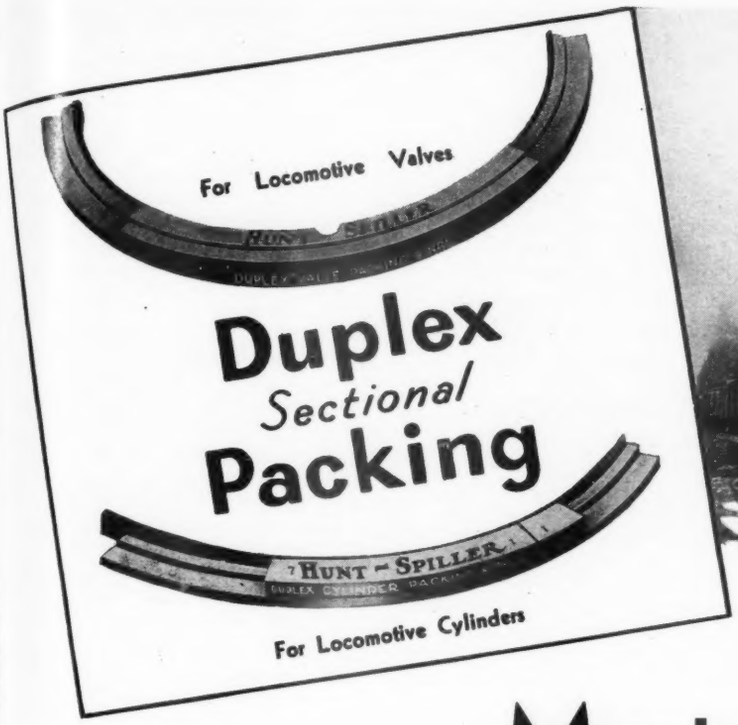
N. B. Walton

secretary to superintendent, telegraph operator and secretary to vice-president and assistant trainmaster. In 1907 Mr. Walton was appointed secretary to the vice-president and later inspector of transportation of the Great Northern at St. Paul, returning to the Grand Trunk at Toronto in April, 1908, as claims agent. In October of that year Mr. Walton became secretary to the general superintendent of the Grand Trunk Pacific at Winnipeg and served subsequently as trainmaster at Wainwright, Alta., assistant to general superintendent at Winnipeg, and superintendent at Edmonton, Alta. In September, 1920, Mr. Walton became assistant general superintendent of the Canadian National at Prince Rupert, B. C., and was transferred to Winnipeg in 1924 as general superintendent. He was appointed general superintendent of transportation of the Western region in March, 1930, the position he held until his recent appointment.

TRAFFIC

Walter H. Kuhls has been appointed coal traffic manager of the Chicago, Mil-

Continued on next left-hand page



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waukee, St. Paul & Pacific, with headquarters at Chicago, to succeed **Joe T. Averitt,** deceased. Mr. Kuhls has been connected with the coal traffic department of the Milwaukee since 1924.

W. G. Downard has been appointed general agent for the Grand Trunk, with headquarters at Buffalo, N. Y.

D. C. Wilkens, general agent of the Western Pacific, with headquarters at Fresno, Cal., has been transferred to Sacramento, Cal., and has been succeeded by **Charles K. Faye.**

M. W. Roper and **J. P. Haynes** have been appointed assistant general freight agents on the Western Pacific, with headquarters at San Francisco, Cal. In these newly-created positions, these officers will handle matters pertaining to freight rates, tariff publications and such other duties as may be assigned to them from time to time.

C. M. Mattson, traveling agent on the Chicago & North Western, has been appointed to the newly-created position of supervisor of passenger sales training, in which capacity he will direct a campaign of training for traffic representatives and ticket agents of this company in modern methods of developing goodwill and congenial public relations.

W. E. Bernthal, chief divisions clerk in the general freight office of the St. Louis-San Francisco at St. Louis, Mo., has been promoted to assistant general freight agent, with the same headquarters, in which capacity he will take over a portion of the duties of **Frederick C. Freiburg,** general freight agent, who has retired after more than 45 years of service.

Effective November 16, the New York, New Haven & Hartford, the New England Steamship Company and the New England Transportation Company have established an office in the Brisbane building, Buffalo, N. Y. **Harry K. Thomas** will assume the duties of district traffic agent to relieve **John J. Power,** who is convalescing from a serious illness.

L. M. Jones, assistant general passenger agent of the Chicago, Milwaukee, St. Paul & Pacific, whose appointment as assistant passenger traffic manager at Chicago was reported in the *Railway Age* of November 14, has been in the service of this company for 25 years. He was born at Spencer, Iowa, and entered the service of the Milwaukee in 1911, as assistant ticket agent at Minneapolis, Minn. Subsequently he served successively as city passenger agent, and traveling passenger agent, and in 1920 he was appointed general agent, passenger department, at St. Paul, Minn. In 1924 Mr. Jones was sent to Chicago as head of the road's dining car department. He had been assistant general passenger agent at Chicago only a short time.

L. M. Jones

ENGINEERING AND SIGNALING

J. J. Desmond, division engineer of the Chicago Terminal division of the Illinois Central, who has been on a leave of absence because of ill health, returned to his duties on November 1. **F. W. Armistead,** division engineer at Clinton, Ill., who has also been on a leave of absence because of ill health, returned to his position on the same date.

W. C. Pruett, assistant general foreman in the maintenance of way department of the Missouri-Kansas-Texas, with headquarters at Muskogee, Okla., and formerly district engineer at Muskogee, effective October 15 was reappointed district engineer on the Texas lines of the Katy, with headquarters at Denison, Tex., to succeed **J. J. Gallagher,** whose promotion to superintendent is noted elsewhere in these columns.

MECHANICAL

J. P. Becker, assistant to the mechanical engineer of the Chicago Great Western, has been appointed to the newly-created position of general locomotive inspector, with headquarters as before at Oelwein, Iowa.

SPECIAL

C. L. LaFountaine has been appointed general safety supervisor of the Great Northern, with headquarters at St. Paul, Minn., to succeed **Earl E. Thompson,** transferred.

J. F. Irmiter has been appointed assistant manager of the advertising department of the Chicago & North Western, with headquarters at Chicago, to succeed **Harry Frier,** who resigned recently to enter other work. Mr. Irmiter, who will be in charge of publicity for the railroad, has been in newspaper and advertising work in Chicago for the past 16 years, during 10 of which he served as city editor of the Chicago Journal of Commerce. Recently he has been associated with the Caples Company as an account executive.

OBITUARY

Thomas Beaghen, Jr., superintendent car maintenance, Mexican Petroleum Corporation, with headquarters at New York, died on November 4. Mr. Beaghen, who was 60 years of age, was born at Manchester, England. In addition to his duties for the past 17 years with the petroleum company, he was for many years a member of the Arbitration and Tank Car committees of the Mechanical Division, Association of American Railroads, as well as on American Petroleum Institute's committees on railway equipment and the Bureau of Explosives' regulations.

Paul L. Grove, assistant to the general manager of the Pennsylvania, with headquarters at Chicago, died on November 10 in a hospital at Evanston, a suburb of Chicago, following a short illness. Mr. Grove had been in the service of the Pennsylvania for more than 42 years. He was born on October 3, 1878, at Altoona, Pa., and on May 1, 1894, he became connected with the motive power department of the Pennsylvania at Altoona. In 1913, after serving in various capacities, he was advanced to master mechanic and four years later he became superintendent of the Delaware division, later serving in a similar capacity on the Monongahela and New York divisions. In 1923 he was advanced to general superintendent of the Michigan division, and only a short time later he became general agent and superintendent of the Grand Rapids division. Mr. Grove became general superintendent of the Lake division, with headquarters at Cleveland, Ohio, in 1926, and was advanced to assistant to the general manager of the Central region, with headquarters at Pittsburgh, Pa., in 1931. He had been located at Chicago since 1932.

Richard A. White, former general auditor, lines east, of the New York Central, died in Jamestown, N. Y., on November 15. Mr. White was born June 9, 1860, at Hartford, Conn., and was graduated from Trinity College at Hartford in 1881. He entered railway service in 1882 as ticket agent for the New York, New Haven & Hartford, and from 1884 to 1886 he was employed in the general auditor's office of the New York, West Shore & Buffalo (now New York Central). From 1886 to October 1, 1889, Mr. White served as chief clerk to auditor disbursements of the West Shore and from the latter date to May 1, 1893, he was in charge of statistics under the comptroller of the New York Central & Hudson River (now N. Y. C.). From May 1, 1893, to February, 1906, he was auditor disbursements of the same road and from the latter date to February, 1910, served as auditor of the same road. Mr. White was general auditor of the New York Central lines east of Buffalo from February, 1910, to October 29, 1918. From October 29, 1918, to March 1, 1920, he was federal auditor of the New York Central, the Central New York Southern Railroad operation discontinued, Lake Erie & Pittsburg, the Troy Union and the Cherry Tree & Dixonville. On March 1, 1920, he retired from service and subsequently he became comptroller of the Jamestown, Westfield & Northwestern, which position he held at the time of his death. In 1915-1916 he was president of the Association of American Railway Accounting Officers.

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from 140 Monthly Reports of Revenues and Expenses representing 144 Class I Steam Railways

FOR THE MONTH OF SEPTEMBER, 1936 AND 1935

Item	United States		Eastern District		Southern District		Western District	
	1936	1935	1936	1935	1936	1935	1936	1935
Average number of miles operated	236,685	237,617	58,551	58,876	44,892	45,112	133,242	133,629
Revenues:								
Freight	$291,772,425	$250,629,368	$119,505,186	$100,519,920	$55,526,137	$46,976,256	$116,741,102	$103,133,192
Passenger	36,355,508	30,824,345	20,906,574	17,999,896	4,378,719	3,654,796	11,070,215	9,169,653
Mail	7,690,785	7,222,146	3,008,366	2,813,194	1,282,944	1,257,425	3,399,475-	3,151,527
Express	5,545,627	4,904,321	2,513,248	2,164,618	964,415	894,704	2,067,964	1,844,999
All other transportation	7,618,400	6,618,227	3,819,500	3,350,725	870,986	731,119	2,927,914	2,536,383
Incidental	7,541,731	6,147,144	3,789,770	3,048,012	836,256	797,377	2,915,705	2,301.755
Joint facility—Cr.	922,993	771,342	299,879	253,336	176,946	155,472	446,168	362,534
Joint facility—Dr.	240,807	170,798	51,767	48,033	20,053	17,951	168,987	104,814
Railway operating revenues	357,206,662	306,946,095	153,790,756	130,101,668	64,016,350	54,449,198	139,399,556	122,395,229
Expenses:								
Maintenance of way and structures	42,116,399	36,777,814	16,276,921	13,925,190	6,899,721	6,309,105	18,939,757	16,543,519
Maintenance of equipment	66,402,281	55,420,760	30,400,304	23,809,627	12,283,992	10,667,325	23,717,985	20,943,808
Traffic	8,233,557	7,665,560	3,101,821	2,909,110	1,596,601	1,457,719	3,535,135	3,298,731
Transportation	116,220,055	103,868,344	51,747,358	46,382,904	18,528,657	16,576,298	45,944,040	40,909,142
Miscellaneous operations	3,187,625	2,587,521	1,406,444	1,172,438	305,194	254,647	1,475,987	1,160,436
General	13,018,388	12,138,809	5,674,755	5,360,269	2,228,671	1,992,012	5,114,962	4,786,528
Transportation for investment—Cr.	625,045	387,372	110,966	69,431	119,058	38,163	395,021	279,778
Railway operating expenses	248,553,260	218,071,436	108,496,637	93,490,107	41,723,778	37,218,943	98,332,845	87,362,386
Net revenue from railway operations	108,653,402	88,874,659	45,294,119	36,611,561	22,292,572	17,230,255	41,066,711	35,032,843
Railway tax accruals	26,861,239	20,805,702	11,990,355	9,203,160	5,495,713	4,190,748	9,375,171	7,411,794
Railway operating income	81,792,163	68,068,957	33,303,764	27,408,401	16,796,859	13,039,507	31,691,540	27,621,049
Equipment rents—Dr. balance	8,233,993	7,806,599	3,346,178	3,452,509	*d* 92,445	86,217	4,980,260	4,267,873
Joint facility rent—Dr. balance	3,392,144	2,913,093	1,860,331	1,730,189	356,729	175,361	1,175,084	1,007,543
Net railway operating income	*a* 70,166,026	*b* 57,349,265	28,097,255	22,225.703	16,532,575	12,777,929	25,536,196	22,345,633
Ratio of expenses to revenues (per cent)	69.58	71.05	70.55	71.86	65.18	68,36	70.54	71.38
Depreciation included in operating expenses	16,079,065	16,238,186	7,056,757	7,140,533	3,169,118	3,200,061	5,853,190	5,897,592
Total maintenance before depreciation	92,439,615	75,960,388	39,620,468	30,594,284	16,014,595	13,776,369	36,804,552	31,589,735
Net railway operating income before depreciation	86,245,091	73,587,451	35,154,012	29,366,236	19,701,693	15,977,990	31,389,386	28,243,225

FOR NINE MONTHS ENDED WITH SEPTEMBER, 1936 AND 1935

Average number of miles operated	236,909	238,071	58,616	58,982	44,925	45,234	133,368	133,855
Revenues:								
Freight	$2,385,034,198	$2,027,742,418	$1,016,613,107	$872,465,074	$467,614,615	$399,400,569	$900,806,476	$755,876,775
Passenger	307,232,396	267,052,512	173,303,662	155,271,769	41,239,653	34,787,064	92,689,081	76,993,679
Mail	68,738,314	66,957,963	26,450,696	25,751,455	12,174,069	11,872,725	30,113,549	29,333,783
Express	42,063,007	38,576,002	16,850,125	15,344,199	8,779,988	8,613,114	16,432,894	14,618.689
All other transportation	62,908,707	55.231,647	32,896,009	29,608,712	6,309,593	5,519,536	23,703,105	20,103,399
Incidental	58,303,257	50,849,698	30,483,882	26,522,928	7,970.605	7,448,047	19,848,770	16,878.723
Joint facility—Cr.	8,335,650	7,155,655	2,569,869	2,223,828	1,828,094	1,636,324	3,937,687	3,295,503
Joint facility—Dr.	2,151,219	1,786,768	471,015	488,757	196,077	156,704	1,484,127	1,141,307
Railway operating revenues	2,930,464,310	2,511,779,127	1,298,696,335	1,126,699,208	545,720,540	469,120,675	1,086,047,435	915,959,244
Expenses:								
Maintenance of way and structures	343,241,002	297,532,028	131,656,119	113,515,236	60,631,644	55,828,311	150,953,239	128,188,481
Maintenance of equipment	577,504,867	500,605,348	260,641,797	220,455,124	105,724,432	95,442,442	211.138,638	184,707,782
Traffic	74,486,406	70,617,288	27,640,789	26,564,095	14,380,287	13,471,121	32,465,330	30,582,072
Transportation	1,029,131,205	922,497,997	470,741,158	424,893,101	169,146,980	154,110,010	389,243,067	343,494,886
Miscellaneous operations	26,324,700	22,487,851	11,783,666	10,284,903	3,155,261	2,720,486	11,385.773	9,482,462
General	117,521,551	106,139,354	51,621,586	48,702,235	19,964,181	18,584,870	45,935,784	38,852,249
Transportation for investment—Cr.	3,607,919	2,486,661	420,837	504,876	583,862	303,452	2,603,220	1,678,333
Railway operating expenses	2,164,601,812	1,917,393,205	953,664,278	843,909,818	372,418,923	339,853,788	838,518.611	733,629,599
Net revenue from railway operations	765,862.498	594,385,922	345,032,057	282.789,390	173,301,617	129,266.887	247,528.824	182.329,645
Railway tax accruals	231,403,928	182,517,653	97,982,310	76,063,697	47,412,755	37,559,602	86,008,863	68,894,354
Railway operating income	534,458,570	411,868,269	247,049,747	206,725,693	125,888,862	91,707.285	161,519,961	113,435,291
Equipment rents—Dr. balance	70,194,925	64,193,554	32,059,306	30,470,435	2,986,615	3,254,827	35,149,004	30,468,292
Joint facility rent—Dr. balance	29,399,641	26,472,946	16,015,585	15,130,153	3,555,886	2,568,073	9,828,170	8,774,720
Net railway operating income	c 434.864,004	e 321,201,769	198,974,856	161,125,105	119,346,361	85,884,385	116.542,787	74,192,279
Ratio of expenses to revenues (per cent)	73.87	76.34	73.43	74.90	68.24	72.44	77.21	80.09
Depreciation included in operating expenses	145,141,657	146,288.095	63,270.612	63.922.671	28,676,249	28,673,342	53,194,796	53,692,082
Total maintenance before depreciation	775,604.212	651,849,281	329,027,304	270,047,689	137,679,827	122,597,411	308.897.081	259,204,181
Net railway operating income before depreciation	580,005.661	467,489,864	262,245,468	225,047.776	148,022,610	114,557,727	169,737,583	127,884,361

a Includes charges to Railway Tax Accruals in the total amount of $5,346,172 itemized as follows: $1,458,054 for taxes under the requirements of the Social Security Act of 1935, and $3,888,118 under the requirements of an Act approved August 29, 1935, levying an excise tax upon carriers and an income tax upon their employees, and for other purposes. (Public No. 400, 74th Congress.)

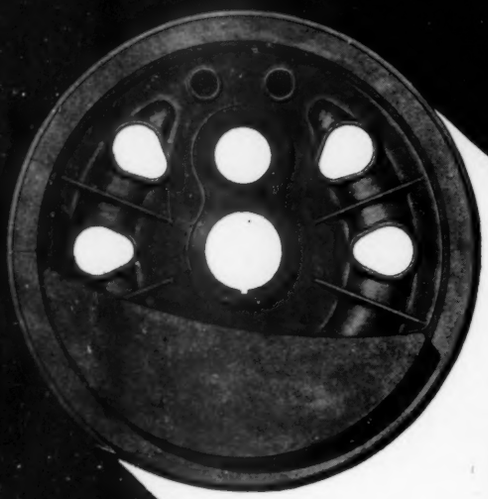
b Includes credits to General Expenses in the amount of $396,149, on account of reversal of charges previously made for liability under the Railroad Retirement Act of 1934.

c Includes charges to Railway Tax Accruals in the total amount of $40,440,780 itemized as follows: $13,111,962 for taxes under the requirements of the Social Security Act of 1935, and $27,328,818 under the requirements of an Act approved August 29, 1935, levying an excise tax upon carriers and an income tax upon their employees, and for other purposes. (Public No. 400, 74th Congress.)

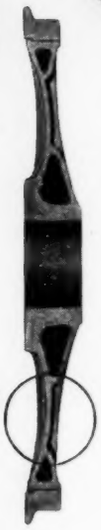
d Deficit or other reverse items.

e Includes credits to General Expenses in the amount of $7,361,639 on account of reversal of charges previously made for liability under the Railroad Retirement Act of 1934.

Compiled by the Bureau of Statistics, Interstate Commerce Commission, Subject to Revision



NEW LIGHT ON AN OLD PROBLEM



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